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Ontario - Legislative Assembly

SESSIONAL PAPERS

VOL. LII.—PART VI

SIXTH SESSION

OF THE

FIFTEENTH LEGISLATURE

OF THE

PROVINCE OF ONTARIO

178687.
15. 3. 23.

SESSION 1920

TORONTO:
Printed by CLARKSON W. JAMES, Printer to the King's Most Excellent Majesty
1922

Printed by
THE RYERSON PRESS

LIST OF SESSIONAL PAPERS

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No. 1 Public Accounts of the Province for the year ending 31st October, 1919. Presented to the Legislature, 19th March, 1920. *Printed.*

No. 2 Estimates—Supplementary for the service of the Province for the year ending 31st October, 1920. Presented to the Legislature, 13th April, 1920. *Printed.* Further Supplementary Estimates. Presented to the Legislature, 13th May, 1920. *Printed.* Estimates for the year ending 31st October, 1921. Presented to the Legislature, 26th May, 1920. *Printed.*

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No. 3 Report of the Minister of Lands, Forests and Mines for the year 1919. Presented to the Legislature, 28th May, 1920. *Printed.*

No. 4 Report of the Bureau of Mines, for the year 1919. Presented to the Legislature, 19th April, 1920. *Printed.*

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No. 5 Report of the Inspector of Division Courts, for the year 1919. Presented to the Legislature, 30th April, 1920. *Printed.*

No. 6 Report of the Inspector of Legal Offices, for the year 1919. Presented to the Legislature, 26th April, 1920. *Printed.*

No. 7 Report of the Inspector of Registry Offices, for the year 1919. Presented to the Legislature, 26th April, 1920. *Printed.*

No. 8 Report of the Provincial Municipal Auditor, for the year 1919. Presented to the Legislature, 4th May, 1920. *Printed.*

No. 9 Report of the Commissioners for the Queen Victoria Niagara Falls Park, for the year 1919. Presented to the Legislature, 13th May, 1920. *Printed.*

No. 10 Report of the Inspector of Insurance, for the year 1919. Presented to the Legislature, 6th May, 1920. *Printed.*

No. 11 Report of the Registrar of Friendly Societies. Transactions for the year 1919. Presented to the Legislature, 6th May, 1920. *Printed.*

No. 12 Financial Statements made by Loan Corporations, Building Societies, Loaning Land Companies and Trust Companies, for the year 1919. Presented to the Legislature, 6th May, 1920. *Printed.*

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No. 13 Report of the Minister of Public Works of the Province, for the year 1919. Presented to the Legislature, 31st March,.1920. *Printed.*

No. 14 Report of the Game and Fisheries Department, for the year 1919. Presented to the Legislature, 16th April, 1920. *Printed.*

No. 15 Report on Highway Improvement in the Province, for the year 1919. Presented to the Legislature, 7th May, 1920. *Printed.*

No. 16 Report of the Trades and Labour Branch, for the year 1919. Presented to the Legislature, 28th May, 1920. *Printed.*

No. 17 Report of the Minister of Education, for the year 1919. Presented to the Legislature, 27th April, 1920. *Printed.*

No. 18 Report of the Board of Governors of the University of Toronto, for the year ending 30th June, 1919. Presented to the Legislature, 12th March, 1920. *Printed.*

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No. 19 Report of the Secretary and Registrar of the Province, for the year 1919. Presented to the Legislature, 28th May, 1920. *Printed.*

No. 20 Report upon the Registration of Births, Marriages and Deaths, for the year 1919. Presented to the Legislature, 26th May, 1920. *Printed.*

No. 21 Report of the Provincial Board of Health, for the year 1919. Presented to the Legislature, 30th March, 1920. *Printed.*

No. 22 Report on the Hospitals for the Insane, for the year 1919. Presented to the Legislature, 28th May, 1920. *Printed.*

No. 23 Report on Idiots and Epileptics, for the year 1919. Presented to the Legislature, 28th May, 1920. *Printed.*

No. 24 Report on Hospital for Feeble-Minded, Orillia, for the year 1919, and Part II. on Feeble-Minded in Ontario. Presented to the Legislature, 28th May, 1920. *Printed.*

No. 25 Report upon the Hospitals and Charities for the year 1919. Presented to the Legislature, 28th May, 1920. *Printed.*

No. 26 Report upon the Prisons and Reformatories for the year 1919. Presented to the Legislature, 28th May, 1920. *Printed.*

No. 27 Report upon Neglected and Dependent Children, for the year 1919. presented to the Legislature, 26th May, 1920. *No report.*

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No. 29	Report of the Department of Agriculture, for 1919. Presented to the Legislature, 26th April, 1920. *Printed.*
No. 30	Report of the Agricultural College and Agricultural Farm, for the year 1919. Presented to the Legislature, 27th April, 1920. *Printed.*
No. 31	Report of the Ontario Veterinary College, for the year 1919. Presented to the Legislature, 27th April, 1920. *Printed.*
No. 32	Report of the Ontario Agricultural and Experimental Union, for the year 1919. Presented to the Legislature, 26th April, 1920. *Printed.*
No. 33	Report of the Stallion Enrolment Board, for the year 1919. Presented to the Legislature, 21st April, 1920. *Printed.*
No. 34	Report of the Ontario Vegetable Growers' Association, for the year 1919. Presented to the Legislature, 26th April, 1920. *Printed.*
No. 35	Report of the Corn Growers' Association, for the year 1919. Presented to the Legislature, 29th April, 1920. *Not Printed.*
No. 36	Report of the Entomological Society of Ontario, for the year 1919. Presented to the Legislature, 27th April, 1920. *Printed.*
No. 37	Report of the Ontario Bee-Keepers' Association, for the year 1919. Presented to the Legislature, 27th April, 1920. *Printed.*
No. 38	Report of the Dairymen's Association of Ontario, for the year 1919. Presented to the Legislature, 29th April, 1920. *Printed.*
No. 39	Report of the Live Stock Associations of Ontario, for the year 1919. Presented to the Legislature, 29th April, 1920. *Printed.*
No. 40	Copies of Orders-in-Council under section 78 of the Surrogate Courts Act, cap. 62, R.S.O., 1914. Presented to the Legislature, March 19th and April 14th, 1920. *Not printed.*
No. 41	Report of the Women's Institutes of Ontario, for the year 1919. Presented to the Legislature, 29th April, 1920. *Printed.*
No. 42	Report of the Agricultural Societies of Ontario, for the year 1919. Presented to the Legislature, 6th March, 1920. *Printed.*
No. 43	Report on the Horticultural Societies of Ontario, for the year 1919. Presented to the Legislature, 21st April, 1920. *Printed.*
No. 44	Report of the Fruit Growers' Association of Ontario, for the year 1919. Presented to the Legislature, 27th April, 1920. *Printed.*
No. 45	Report of the Horticultural Experiment Station, Vineland Station, Ontario, for the year 1919. Presented to the Legislature, 27th April, 1920.

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No. 46 Report of the Statistics and Publications Branch of Department of Agriculture, for the year 1919. Presented to the Legislature, 27th April, 1920. *Printed.*

No. 47 Report of the Bureau of Municipal Affairs, for the year 1919. Presented to the Legislature, 10th March, 1920. *Printed.*

No. 48 Report of the Temiskaming and Northern Ontario Railway, for the year 1919. Presented to the Legislature, 28th May, 1920. *Printed.*

No. 49 Report of the Hydro-Electric Power Commission, for the year 1919. Presented to the Legislature, 18th May, 1920. *Printed.*

No. 50 Report of the Ontario Railway and Municipal Board, for the year 1919. Presented to the Legislature, 10th May, 1920. *Printed.*

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No. 51 Returns from the Records of the Elections and By-Elections in 1919-20. Presented to the Legislature, 10th March, 1920. *Printed.*

No. 52 Report of the Archivist of Ontario, for the year 1919. Presented to the Legislature, 28th May, 1920. *Printed.*

No. 53 Report on the State of the Legislative Library. Presented to the Legislature, 20th March, 1920. *Not Printed.*

No. 54 Statements of Provincial Auditor under Audit Acts. Presented to the Legislature, 23rd April, 1920. *Printed.*

No. 55 Report of the Workmen's Compensation Board, up to 31st December, 1919. Presented to the Legislature, 28th April, 1920. *Printed.*

No. 56 Report of Mr. Justice Hodgins, on the Care and Control of the Mentally Defective. Presented to the Legislature, 12th March, 1920. *Printed.*

No. 57 Regulations and Orders-in-Council under the authority of the Department of Education Act or the Acts relating to Public, Separate or High Schools. Presented to the Legislature, 12th March, 6th April, 7th May, and 28th May, 1920. *Not Printed.*

No. 58 Report on the Distribution of the Statutes for 1918 and 1919. Presented to the Legislature, 12th March, 1920. *Not Printed.*

No. 59 Return to an Order of the House of the 12th day of March, 1920, for a Return of all Special Warrants issued from the 31st day of October, 1919, to the 29th day of February, 1920, together with such details as will plainly set forth the purposes for which the money in each case was expended. Presented to the Legislature, 12th March, 1920. Mr. *O'Neill. Not Printed.*

No. 60 Report on the Classification of the Public Service. Presented to the Legislature, 18th March, 1920. *Not Printed.*

No. 61	Report of Commissioners to enquire into and report upon the affairs of the Soldier Settlement Colony at Kapuskasing, with the Evidence. Presented to the Legislature, 18th and 30th March, 1920. *Printed.*
No. 62	Return to an Order of the House of the 19th March, 1920, for a Return showing: 1. How many experts or persons having technical or special knowledge, were appointed under The Ontario Housing Act, 1919. 2. What are their names. 3. What salary or remuneration did each of said persons receive. What other officers, clerks and servants were appointed to carry out the provisions of said Act. 5. What are their names. What salary or remuneration did each of said persons receive. 7. What is the total amount paid for salaries to all of such persons combined. 8. What is the total amount paid for remuneration other than salaries to all of such persons combined. 9. What is the total amount paid for travelling expenses to all of such persons combined. 10. What is the total amount to date expended in any way for salaries, remuneration, travelling expenses or otherwise in carrying out the provisions of said Act, as provided in section 24 thereof. Presented to the Legislature, 22nd March, 1920. Mr. *Sinclair. Not Printed.*
No. 63	Return to an Order of the House of the 19th March, 1920, for a Return showing: 1. How many licenses were issued by the License Board under the now repealed "Liquor License Act" during the following years: (*a*) from 1905-1910; (*b*) from 1910-1916. 2. What was the approximate yearly cost to the Province of the said License Board under the said Act. Presented to the Legislature, 24th March, 1920. Mr. *Pinard. Not Printed.*
No. 64	Return to an Order of the House of the 19th March, 1920, for a Return showing the quantity of liquor that has passed through the hands of Government liquor vendors for each month, separately, during the period from the 1st September, 1919, to the 1st March, 1920. Presented to the Legislature, 24th March, 1920. Mr. *Tolmie. Not Printed.*
No. 65	Report of the Civil Service Commissioner for Ontario for the year ending 31st October, 1919. Presented to the Legislature, 24th March, 1920. *Printed.*
No. 66	Report of Sir William Ralph Meredith, Commissioner in the matter of certain charges as to the Administration of the Ontario Temperance Act. Presented to the Legislature, 24th March, 1920. *Printed.*
No. 67	Copy of an Order-in-Council approved by His Honour the Lieutenant-Governor in Council, dated the 19th day of March, 1920, relating to the preservation of Crown Timber. Presented to the Legislature, 25th March, 1920. *Not Printed.*
No. 68	Report of F. C. Clarkson, F.C.A., respecting Hydro-Electric Power Commission of Ontario. Also, Audit and Report of G. T. Clarkson, F.C.A., upon the Accounts of the Hydro-Electric Power Commission of Ontario, for the year ending October 31st, 1919. Presented to the Legislature, 26th March and 6th April, 1920. *Printed.*

No. 69 Interim report and report of Clarkson, Gordon and Dilworth, Chartered Accountants, respecting Racing Associations in the Province of Ontario, under terms of Order-in-Council, dated 30th April, 1917. Presented to the Legislature, 26th March, 1920. *Not Printed.*

No 70 Return to an Order of the House of the 19th day of March, 1920, showing how many persons are employed in the enforcement of the Ontario Temperance Act. Presented to the Legislature, 29th March, 1920. Mr. *McLeod.* *Not Printed.*

No. 71 Regulations of the Provincial Board of Health. Presented to the Legislature, 30th March, 1920. *Printed.*

No. 72 Return to an Order of the House of the 12th day of March, 1920, for a Return of copies of:—(1) All correspondence or agreements entered into, between the Government of the Province of Ontario, or any officer or official thereof (subsequent to the Return presented to the House during the Session of 1919, being S.P. No. 73), and J. J. Carrick, or anyone in his behalf, or any other person or persons, company or corporation, relative to the sale of the Pic River and Black Sturgeon River Timber Limits in the District of Thunder Bay and the carrying out of the provisions of a certain agreement dated the 9th day of May, 1917, between the said Carrick and the Government of the Province of Ontario (as represented by the Minister of Lands, Forests and Mines), requiring as part of the consideration for the transfer of the said limits, the erection and operation of a pulp mill and a paper mill within a period of three years at an expenditure of not less than $2,000,000, which said agreement was rescinded by a subsequent agreement bearing date the 8th day of May, 1918, whereby the Government relieved the said Carrick from carrying out the terms of the first-mentioned agreement, by reason of the alleged absence of suitable water power to permit of the operation of the said pulp and paper mills or warrant their erection; (2) all correspondence (subsequent to the Return above mentioned) between the Government of the Province of Ontario and the Hydro-Electric Power Commission of Ontario with reference to the supply of power for the operation of the said mills; (3) all correspondence (subsequent to the Return above mentioned) between the Hydro-Electric Power Commission of Ontario and the said Carrick, or any one in his behalf, with reference to the supply of power for the operation of the said mills. Presented to the Legislature, 31st March, 1920. Mr. *Dewart.* *Printed.*

No. 73 Audit and report of G. T. Clarkson, F.C.A., upon the Ontario Power Company of Niagara Falls and the Ontario Transmission Company, Limited, for the year ending 31st October, 1919. Presented to the Legislature, 6th April, 1920. *Printed.*

No. 74 Return to an Order of the House of the 7th April, 1920, for a Return showing:—1. The acreage sown to flax by the Department of Agriculture in 1918. 2. Number of bushels of flax seed produced. 3. To whom sold and price per bushel received. 4. Quantity flax fibre produced; to whom sold and price received. 5. Copies of all cables or other communications between the Government and the Agent-General in London regarding the growing of flax in Ontario during the year 1917. 6. Detailed cost of the experiment and net profit or loss to the Department. Presented to the Legislature, 8th April, 1920. Mr. *Henry*. *Printed.*

No. 75 Return to an Order of the House of the 26th day of March, 1920, for a Return of copies of correspondence, tenders, contracts, vouchers, and all other papers, letters or documents in connection with the construction of the road in the Municipality of Orillia Township in the Electoral Distict of Simcoe East, from the Severn Bridge to Orillia, known as the Muskoka Road and constructed under the Northern Development Branch of the Lands, Forests and Mines Department between the dates of the 1st of September, 1919, and the 15th of November, 1919. Presented to the Legislature, 12th April, 1920. Mr. *Johnston* (*Simcoe.*) *Not Printed.*

No. 76 Recommendations as a Basis of Adjustment of Difficulties which have arisen in the Kapuskasing Soldiers' Colony, with open letter with reference thereto addressed to the Soldiers of Kapuskasing. Presented to the Legislature, 13th April, 1920. *Not Printed.*

No. 77 Copies of Orders-in-Council designation pursuant to section 14 of The Hospitals and Charitable Institutions Act, Hospitals, Refuges, Orphanages and Infants to which aid may be granted. Presented to the Legislature, 14th April, 1920. *Not Printed.*

No. 78 Return to an Order of the House of the 7th April, 1920, for a Return showing the whole amount of $88,853.30 (page 738, column 2, Public Accounts, 1918-19), expended in travelling, office and other expenses of the Soldiers' Aid Commission, and in what other manner this amount was expended. Presented to the Legislature, 14th April, 1920. Mr. *Pinard*. *Not Printed.*

No. 79 Return to an Order of the House of the 22nd March, 1920, for a Return shewing:—1. All requests of memorials filed with the Minister of Public Works, or the Labour Department, during the years 1916, 1917, 1918, 1919 and 1920, to date, from Labour Organizations. Presented to the Legislature, 15th April, 1920. Mr. *Rankin*. *Printed.*

No. 80 Report of Sir William Ralph Meredith and James Gunn, Esquire, Commissioners under Commission dated January 21st, 1919, in the matter of the Administration of Municipal Police Force throughout the Province, the Constitution of Police Commissioners, etc. Presented to the Legislature, 19th April, 1920. *Not Printed.*

No. 81 Regulations of the Provincial Board of Health respecting Venereal Diseases. Presented to the Legislature, 21st April, 1920. *Printed for Distribution.*

No. 82 Statement of the Civil Service Commissioner respecting the Public Service of Ontario, 1920. Presented to the Legislature, 24th March, 1920. *Not Printed.*

No. 83 Copies of correspondence between the Hydro-Electric Power Commission and others respecting meeting of Midland Municipal Association at Peterborough, April 28, 1920. Presented to the Legislature, 30th April, 1920. *Not Printed.*

No. 84 Return to an Order of 7th May, 1920, for a Return shewing:— 1. How many adding machines have been purchased or ordered by the different departments of the Government and how they are allotted to the departments. 2. What is the date of such purchases. 3. What is the cost of each machine and the name and place of business of the seller. Presented to the Legislature, 7th May, 1920. Mr. *Evanturel. Not Printed.*

No. 85 Return to an Order of the House of the 31st March, 1920, for a Return shewing:—1. Names of all Deputy Ministers, Chief Clerks and Clerks who, during the calendar years 1916, 1917, 1918 and 1919, applied on medical certificates for leave of absence from their duties in respect of the following departments: (*a*) Provincial Secretary and Registrar's Department; (*b*) King's Printer Department. 2. To which of the parties so applying was leave granted. 3. From which of them was leave withheld. 4. Whether the monthly payments of salary continued to the officials who were granted leaves of absence during such absence. Presented to the Legislature, 11th May, 1920. Mr. *Cooper* (*Toronto*). *Not Printed.*

No. 86 Return to an Order of the House of the 19th May, 1920, for a Return shewing in detail all payments and disbursements made under the heading of "Organization of Resources Committee, Expenses of Patriotic Fund and Red Cross Campaign. For expenses of the campaign to increase food production and for services and expenses of the Provincial Committee appointed under Organization of Resources Act":—In the Public Accounts of 1916-17, page 653, Organization of Resources Committee, accountable, $111,000; In the Public Accounts for 1917-18, page 618, Organization of Resources Committee, accountable, $260,000; In the Public Accounts for 1918-19, page 736, Organization of Resources Committee, advance, $350,000—for which the note in the Public Accounts shows that no audit has been made in any year by the Audit Office. And also for any other sums that have been paid since the end of the last fiscal year in addition to the amount of the last-named advance down to the 1st day of April, 1920, on the same account. And further for the authority under Order-in-Council or otherwise, under which the said bulk sums granted in each year by special warrant were distributed to the funds, committees, organizations or individuals who received the same. Presented to the Legislature, 19th May, 1920. Mr. *Dewart. Not printed.*

No. 87 Report of Colin G. Snider, Commissioner in Enquiry respecting Ontario Hospital, Hamilton. Presented to the Legislature, 28th May, 1920. *Not Printed.*

No. 88 Report of Talbot Macbeth, Commissioner in Enquiry respecting the Ontario Hospital, London. Presented to the Legislature, 28th May, 1920. *Not Printed.*

No. 89 Return to an Order of the House of the 19th March, 1920, for a Return of copies of all correspondence between the Minister of Justice of Canada or any other official of the Dominion Government on the one hand, and the late Premier of the Province of Ontario or any other Minister, officer of official of the Ontario Government, on the other hand, relating to the question of hours of labour being limited to eight hours *per* diem. Presented to the Legislature, 27th May, 1920. Mr. *McAlpine. Not Printed.*

No. 90 Return to an Order of the House of the 21st May, 1920, for a Return shewing:—How many appointments have been made by the Government since November 14th, 1919, as follows: (*a*) name and address of person appointed; (*b*) to what position; (*c*) date of appointment; (*d*) salary paid or to be paid in each case; (*e*) is the appointment temporary or permanent. Presented to the Legislature, 28th May, 1920. Mr. *Buckland. Not Printed.*

No. 91 Return to an Order of the House of the 22nd March, 1920, for a Return shewing:—1. Copies of all papers and correspondence between the present holders of export warehouse licenses and the License Board, or any member thereof. 2. Between such applicants and the Government, or any member thereof. 3. Between the License Board, and any member thereof, and the Government, or any member thereof. 4. And between any Member of the House, and any Member of the Government, or any member of the License Board. Presented to the Legislature, 28th May, 1920. Mr. *Hogarth. Not Printed.*

No. 92 Return to an Order of the House of the 26th March, 1920, for a Return shewing: 1. The names of all civil servants dismissed, retired, or resigned, or whose positions have become vacant from any other cause from the first day of January, 1914. 2. The date of such dismissals, retirements, or resignations respectively. 3. The reason for the occurrence of each vacancy. 4. The salary obtained by the official at the time of removal. 5. The present salary of the new occupant, if any. Presented to the Legislature, 28th May, 1920. Mr. *Dewart. Not Printed.*

No. 93 Return to an Order of the House of the 29th March, 1920, for a Return shewing:—1. How many appointments have been made to the following Government Departments since December 1st, 1919: Attorney-General's Department; Provincial Secretary's Department; Provincial Treasurer's Department; Department of Lands and Forests; Department of Agriculture; Department of Public Works; Department of Labour; Department of Mines. 2. How many of these positions have gone to returned soldiers. 3. And what were the salaries they received. Presented to the Legislature, 28th May, 1920. Mr. *McNamara. Not Printed.*

REPORT

OF THE

Board of License Commissioners for Ontario

ON THE OPERATION OF THE

ONTARIO TEMPERANCE ACT

FOR THE YEAR

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO.

TORONTO:
Printed and Published by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

Printed by
THE RYERSON PRESS

To His Honour LIONEL HERBERT CLARKE,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

The undersigned has the honour to present to your honour the Report of the Board of License Commissioners for Ontario on the Operation of *The Ontario Temperance Act* for 1919.

Respectfully submitted,

H. C. NIXON,

Secretary.

Provincial Secretary's Department,
March 15th, 1920.

REPORT

OF THE

BOARD OF LICENSE COMMISSIONERS FOR ONTARIO

ON THE OPERATION OF THE

ONTARIO TEMPERANCE ACT

FOR THE LICENSE YEAR 1918-1919.

Offices of the Board, 46 Richmond West,
Toronto, March 15th, 1920.

To the Honourable H. C. Nixon,
Provincial Secretary of the Province of Ontario.

Sir,—The Board of License Commissioners for Ontario has the honour to submit its Fourth Annual Report covering the operation of *The Ontario Temperance Act* for the license year of 1918-19, ended April 30, 1919.

The Schedules.

Schedule "A (1)" shows the number of convictions and dismissals under *The Ontario Temperance Act* for the license year 1918-19. The number of convictions of Standard Hotel licensees under this heading were 43, and 9 dismissals, against 2,504 convictions of non-licensees and 470 dismissals. Of the latter, 1,158 convictions and 110 dismissals were upon the charge of being found in a public place in an intoxicated condition. The previous report showed 47 convictions of Standard Hotel licensees and 14 dismissals, as compared with 3,238 convictions of non-licensees and 654 dismissals. The convictions and dismissals shown in the previous report growing out of charges of intoxication in a public place were respectively 1,809 and 163.

Schedule "A (2)" makes a similar return of convictions and dismissals in territory under *The Canada Temperance Act* for the license year 1918-19, showing 29 convictions and 3 dismissals, as against 93 and 15 respectively in the previous report.

Schedule "B" shows the revenue accruing to the Province under *The Ontario Temperance Act* from fines imposed thereunder by license districts, the total revenue from this source for the license year being $231,833.80. The previous report showed a total under this head of $204,514.38.

Schedule "C" shows the expenses for enforcing *The Ontario Temperance Act* by districts for the license year 1918-19, the total being $126,580.99, as compared with $118,982.07 in the last report.

Schedule "D" summarizes the sources which go to make up the total revenue from this Branch for the fiscal year ending 31st October, 1919, $316,087.36, as compared with $213,700.44 for the previous year, or an increase of $102,386.92. Against this total of $316,087.36 may be placed expenses of law enforcement, including salaries of Provincial and local inspectors, law costs, salaries and disbursements of members of the Board and office staff for the fiscal year, amounting to $230,376.28, leaving a credit balance of $85,711.08.

Schedule "E" shows revenues accruing to municipalities which have appointed officers under Section 120 of *The Ontario Temperance Act*. These municipalities have received revenues in fines up to the 30th April, 1919, of $437,812.52. The revenues from the same source received by the municipalities for the year ending the 30th April, 1919, amounted to $338,228.54, being a considerable increase over the previous year. The former amount, together with the sum received by the Province for the corresponding period, namely, $231,833.80, makes the total revenue received between the Province and the municipalities of $669,646.32 as compared with $546,338.98 in last report.

Schedule "F" shows the distribution of Standard Hotels licensed under Section 146, by license districts, for the license year 1918-19, numbering 1,272.

Schedule "H" shows the number of commitments to jail for drunkenness from 1885 to 1919, inclusive.

PERMITS.

Manufacturers' permits issued under Section 121 for the use of alcohol and other liquors for manufacturing purposes, for the license year, numbered 530, supervision of the use of liquor for these purposes having become an important department of the Board's work.

Permits to manufacturers of native wine under Section 44 for the same period numbered 20.

Confiscated Liquor.

The value of confiscated liquor which was sold to the Dispensaries during the fiscal year ending October 31, 1919, was $72,737.43. A considerable quantity of confiscated liquor was donated to Provincial and other hospitals for medicinal uses. No liquor of doubtful quality has been assigned for medicinal uses either in hospitals or on prescriptions in stores of vendors under the Act.

Since the seven vendors' stores came under Board control, about June 1, 1919, provisions respecting confiscated liquor have been improved. Large quantities of inferior liquor have been re-distilled with excellent results, some $37,000 revenue having been obtained from liquor thus treated, it having been transformed into 65 O.P. alcohol. Further like revenue will doubtless be obtained from time to time.

Ontario Government Dispensaries.

The out-standing feature of the Board's administration in the period since the Legislature last met, was the taking over under legislation of last session of the business of seven vendors licensed to sell liquors for medicinal and other non-beverage purposes under the Act. These stores came under the Board's control approximately at June 1st, 1919, and are now known as Ontario Government Dispensaries, in locations as follows: Nos. 1 and 2, Toronto; No. 3, Hamilton; No. 4, London; No. 5, Windsor; No. 6, Kingston; No. 7, Ottawa. The head office is at 29 Front Street East, Toronto, where No. 1 Dispensary is also located.

The Dispensaries are conducted under an exacting system of inspection and report designed by a capable firm of accountants. The business has reached some magnitude, as will be seen by reference to accompanying financial statements for the seven months ended December 31, 1919, the volume of business transacted being approximately at the rate of four million dollars annually. Revocation of the Dominion Order-in-Council prohibiting liquor importations has affected the volume but little, for the reason doubtless that the Dispensaries have the confidence of the public as to quality, price and service, as compared with traffickers beyond the Province whose aim is the largest and speediest profits obtainable.

The net profits of the Dispensaries for the seven months named, after absorption of initial expenses such as are customarily spread over a term of years, are reported at $376,094. Had the usual policy been pursued, the net profits could have been shown to exceed $400,000 for the seven months, but it was concluded that in this case wiping off of initial expenses at once was preferable. The total sales for the seven months were $2,010,404.23, and the gross profits $713,168.65. Gross profits were 35.47 per cent. of the sales, and net profits 20.20 per cent. of the same.

The salaries of Dispensary staffs for the period indicated were $118,949.83, or about 6 per cent. of the aggregate sales of $2,010,404.23. The stocks of liquor on hand at December 31, 1919, amounted to $259,145.16; this, taken with the aggregate business done, indicating that the stock turnover is rapid.

No Draft on Provincial Funds.

The Dispensaries are already self-sustaining, and drew only temporarily on the Province at the outset. An appropriation was made by the Legislature, but a fraction of which was drawn upon. The Board actually drew $50,000 a month for three months, a total of $150,000, and three months thereafter had paid this back entirely, with interest. The Government, therefore, have had their loan repaid in full, and the Dispensaries are now operating entirely on capital derived from profits.

Dispensary Features.

The Board regards the policy of changing the licensed vendorships into Ontario Government Dispensaries as amply vindicated. The Board at the outset decided upon the policy of a flat rate for liquor for medicinal uses, inclusive of delivery charges, under which a Port Arthur patient pays the same price as one in Toronto. Notwithstanding this, the cost of liquor to user and consumer has been less than had been charged by individual vendors f. o. b. at point of shipment. At present, however, the Board and its General Manager are contending against difficulties as to supply and price, emphasized by rapid advances in prices of Ontario liquor which the Board is powerless to control. It has been compelled of late, in consequence, to make increases in Dispensary prices. The Board aims at a basis of gross profit of 33 1-3 per cent. on the sale price, with discounts to druggists, doctors and manufacturers. To hospitals the Board sells at only 5 per cent. gross profit, which means less than cost when overhead charges are included.

As soon as practicable after the Board took control of the Dispensaries, it arranged for a supply of Canadian whiskeys in 6 oz. bottles for filling of medicinal prescriptions upon druggists, and of Imperial quarts (40 ozs.) for the larger prescriptions upon Dispensaries, thus satisfying a general demand for liquor of assured quality in original sealed packages for medicinal uses. As the Dispensaries are now the sole source of supply for druggists under the Act, the good effect of this change is widespread.

Included in this Report is one to the Board from General Manager W. B. Cleland on the Dispensaries, also financial schedules.

DUTIES OF THE BOARD.

As may be inferred, the duties of the Board have been much altered since *The Ontario Temperance Act* came into force, and are in consequence more varied and complex. The impression is erroneous, if held by any one, that the duties have been lightened by discontinuance of liquor licenses to hotels and shops that had been granted under the former *Ontario Liquor License Act.* In the nature of things, sumptuary legislation is difficult to enforce, as indeed substitution of prohibition for license suggests.

The Ontario Temperance Act gives the Board oversight of permitted sale and use of liquor by druggists, doctors, manufacturers, distillers, brewers, makers of native wine, etc., it receiving periodical reports from these, and confers other powers, including regulation of Standard hotels. All legal purchases of liquor pass constantly under review by the Board or its officers.

Growing out of these and of direction of work of Inspectors and officers is a voluminous correspondence, frequent interviews, appeals for guidance on points of administration, etc. Not seldom on the same day do Inspectors from opposite parts of the Province seek instruction by telephone with regard to a prosecution or a seizure.

Unexpected queries often arise, which the following illustrates: A couple of days before the United States went "dry," about the middle of January, a 'phone call from Quebec City asked the Board's consent to passage through this Province *en route* from Illinois State to Quebec City of a car of liquor. There were two calls from the same source, it being claimed in the second conversation that admission of the liquor had been arranged with the Department of Customs at Ottawa. The party was told that the Board would interpose no objection if he would present documentary evidence of the arrangement with the Customs, the route and number of the car, with names of consignor and consignee, so that the car could be identified and traced through this Province and diversion of contents guarded against. That ended the matter; nothing further was heard of the car.

Applications for clemency from persons convicted under the Ontario Temperance Act have been referred to the Board by the Attorney-General for report thereupon since early after the Act came in force, and entail careful investigation and consume much time.

To these duties have within the past year been added responsibility for Ontario Government Dispensaries.

THE BOARD'S ASSISTANTS.

The Board desires to express appreciation of the services of Provincial and Local Inspectors and officers of its staff, whose faithful and resourceful work has contributed to the successful enforcement of the Act. Thanks are also due Superintendent Rogers, of the Provincial Police, and members of his force, for valuable assistance to the same end, notably in frontier inspectorates. Co-operation of these officers with those of the Board has been praiseworthy.

Respectfully submitted,

J. D. FLAVELLE,
Chairman.

SCHEDULE A (1)

Statement showing number of convictions and dismissals of cases for infractions of the Ontario Temperance Act for the license year ending April 30th, 1919

License District.	Against Holders of Standard Hotel Licenses.		Against Non-Licensees.	
	No. of Convictions.	No. of Dismissals.	No. of Convictions.	No. of Dismissals.
Algoma	1		22	13
Brant and Haldimand	1		189	5
Bruce			9	
Carleton			64	2
Dufferin and part Co. Simcoe			23	17
Dundas and Stormont			73	19
Elgin			21	3
Essex			22	8
Frontenac, including Kingston			37	17
Glengarry			74	18
Grenville			61	21
Grey			36	
Guelph and part Co. Wellington			12	
Halton			53	1
Hamilton and part Co. Wentworth	2	1	66	27
Hastings	2	1	14	3
Huron, North (under Canada Temperance Act)			10	2
Huron, South (under Canada Temperance Act)			10	2
Kent			8	4
Kenora			1	
Lambton, East			22	
Lambton, West			7	1
Lanark		1	46	68
Leeds, including Brockville		2	127	18
Lennox and Addington			18	1
Lincoln			28	12
Manitoulin (Canada Temperance Act)			1	
Middlesex, including London			16	8
Nipissing	1		71	1
Niagara Falls and part Co. Welland			269	5
Norfolk			13	3
Northumberland and Durham			24	4
Ontario			30	1
Ottawa, including Eastview			27	6
Oxford			4	1
Parry Sound			86	21
Peel (under Canada Temperance Act)				
Perth (under Canada Temperance Act), including Stratford (Ontario Temperance Act)			30	3
Peterboro	1		6	6
Port Arthur and Fort William	1		41	2
Prescott	9		18	3
Prince Edward and part Co. Hastings			56	3
Rainy River			27	9
Renfrew			39	9
Russell	8	1	35	20
Sault Ste. Marie			30	2
Simcoe and Muskoka	1		29	3
Sudbury			125	20
Temiskaming			200	14
Toronto			94	41

SCHEDULE A (1)—Continued.

License District.	Against Holders of Standard Hotel Licenses.		Against Non-Licensees.	
	No. of Convictions.	No. of Dismissals.	No. of Convictions.	No. of Dismissals.
Victoria and Haliburton	....	....	15	2
Waterloo	11	3	19	3
Welland	2	....	72	12
Wellington	....	....	2	....
Wentworth	....	....	12	6
Windsor	....	....	75	21
York	3	....	5	....
Totals	43	9	2,504	470
Totals, previous report	47	14	3,238	654

Included in the foregoing cases are 1,158 convictions and 110 dismissals under charges of being found in a public place in an intoxicated condition, as compared with 1,809 and 163 respectively in previous report.

SCHEDULE A (2)

Statement showing number of convictions and dismissals under charges of violations of the Canada Temperance Act during the year ending April 30th, 1919.

License District.	Convictions.	Dismissals.
Huron, North	5	1
Huron, South	7	1
Manitoulin	1	....
Peel	7	1
Perth (excluding the City of Stratford)	9	....
Totals	29	3
Totals, previous report	93	15

SCHEDULE B

Statement showing amounts collected and payable to the Province for fines imposed under the Ontario Temperance Act, in each License District, for the License year ending the 30th April, 1919.

Algoma	$3,293 25
Brant and Haldimand	4.950 00
Bruce	950 00
Carleton	4,340 00
Dufferin and Simcoe	2,667 55
Dundas and Stormont	6,411 00
Elgin	840 00
Essex	1,715 00
Frontenac	1,605 00
Grenville	1,550 00
Grey	2,160 40
Guelph	2,585 00
Halton	40 00
Hamilton	13,630 00
Hastings	1.235 00
Kent and Chatham	555 00
Kenora	200 00
Lambton East	220 00
Lambton West	265 00
Lanark	2,580 00
Leeds	7,752 62
Lennox and Addington	2,050 00
Lincoln	6,060 00
Middlesex	1,810 00
Nipissing	6,521 00
Niagara Falls	19,702 75
Norfolk	740 00
Northumberland and Durham	1,343 00
Ontario	2,255 40
Ottawa	3,930 00
Oxford	
Parry Sound	1,160 00
Peterborough East	
Peterborough West	725 00
Port Arthur and Fort William	$4,696 00
Prescott	3,020 00
Prince Edward	7.627 00
Rainy River	1,155 00
Renfrew	4,860 00
Russell	5,325 00
Sault Ste. Marie	3,868 75
Simcoe and Muskoka	3,780 00
Glengarry	6,210 71
Sudbury	25,018 66
Temiskaming	10,715 71
Toronto	19,845 00
Victoria and Haliburton	610 00
Waterloo	6,375 00
Welland	12,174 00
Wellington	20 00
Windsor	6,090 00
Wentworth	250 00
York	2,156 00
	$229,638 80
ADDITIONAL	
Manitoulin	10 00
Huron North	
Huron South	300 00
Perth	595 00
Peel	nil.
Sundry Magistrates	1,290 00
Total	231,833 80
Total previous report.	204,514 38

SCHEDULE C

Statement showing expenses of enforcing Ontario Temperance Act in each License District for the license year ending 30th April, 1919.

Algoma	$2,556 33	Peterborough	1,926 59
Brant	2,455 78	Provincial Officer, East Peterborough,	611 78
Bruce, East	1,743 94	Port Arthur and Fort William.	2,327 97
Carleton	2,481 05	Prescott	1,850 27
Chatham and Kent	1,717 47	Prince Edward	2,647 07
Dufferin	2,495 40	Rainy River	1,402 23
Dundas	2,983 03	Renfrew	1,907 04
Elgin	1,625 32	Russell	2,949 34
Essex	2,110 27	Sault Ste. Marie	2,008 54
Frontenac	2,791 43	Simcoe and Muskoka	3,064 47
Grenville	1,557 01	Stormont and Glengarry	3,527 59
Grey	2,482 57	Sudbury	9,728 96
Guelph	2,188 27	Temiskaming	2,808 44
Halton	1,431 30	Toronto	3,919 89
Hamilton	3,906 43	Victoria and Haliburton	1,758 97
Hastings	1,682 94	Waterloo	1,958 29
Kent	1,105 41	Welland	1,639 59
Kenora	1,108 42	Wellington	796 47
Lambton, East	1,184 25	Wentworth	739 24
Lambton, West	1,693 60	Windsor	3,573 79
Lanark	2,302 40	York	2,018 90
Leeds	3,595 86		
Lennox and Addington	3,641 71		
Lincoln	2,142 26	ADDITIONAL	
Middlesex	2,596 72		
Nipissing	2,621 70		
Niagara Falls	2,331 98	Huron, North	160 63
Norfolk and Haldimand	2,437 94	Huron, South	45 45
Northumberland and Durham	2,307 91	Perth	849 34
Ontario,	1,905 51		
Ottawa	2,167 69	Total	$126,580 99
Oxford	1,401 02		
Parry Sound	1,607 22	Total previous report.	$118,982 07

SCHEDULE D

Statement showing revenue from License Branch for the fiscal year ending 31st October, 1919.

Vendors' License Fees	$25 00	Confiscated Liquor	$72,737 43
Standard Hotel Fees	1,234 00	Sundries	67 95
Fines	242,022 98		
		Total	316,087 36
		Total previous report.	213,709 44

SCHEDULE E

Showing fines imposed under the Ontario Temperance Act, paid to the Municipalities where special officers have been appointed under Sec. 120 of the Ontario Temperance Act for license years 1917-18 and 1918-19, respectively.

—	To 30th April, 1918	To 30th April, 1919
	$ c.	$ c.
Amherstburg	225 00	....
Arnprior	290 00	1,200 00
Aylmer	726 50	135 00
Acton	....	....
Ailsa Craig	....	200 00
Brantford	7,260 00	7,968 75
Bancroft	60 00	....
Bowmanville	230 00	490 00
Brighton V.	....	....
Brockville	1,416 00	2,529 40
Blenheim	10 00	19 00
Belleville	2,960 10	2,845 00
Bradford	50 00	65 00
Blind River	860 00	1,160 00
Burlington	1,048 45	240 00
Burk's Falls	20 00	....
Bridgeburg	330 00	1,485 00
Barrie	549 00	360 00
Blandford	....	....
Bayham	....	....
Bothwell	....	....
Cobourg	300 00	425 00
Colborne	....	....
Carleton Place	106 25	40 00
Cobalt	3,160 00	1,771 00
Cochrane	2,014 50	1,887 30
Courtright	275 00	419 50
Copper Cliff	5,290 00	6,035 00
Chapleau	260 00	700 00
Campbellford	75 65	50 00
Chesley	720 00	....
Cardinal	....	40 00
Charlton	....	....
Coldwater	....	....
Cornwall	355 00	300 00
Cayuga	....	....
Collingwood Tn.	500 00	550 00
Cannington	40 00	....
Chatham	1,825 00	890 00
Clifford	10 00	....
Crowland Tp.	6.865 00	10.835 00
Calvert Tp.	....	....
Dunnville	20 00	240 00
Dresden	430 00	420 00
Dutton	....	....
Drury, Denison and Graham	1,575 00	3.205 00
Dundas Tn.	1,220 00	1,820 00
Dryden	....	....
Deseronto	....	....
Eastview	390 00	510 00
Englehart	310 00	200 00
Elmira	35 00	20 00
Edwardsburg	....	....
Elora	....	....
Fort William	8,995 50	13.460 00
Ford City	780 00	500 00
Fort Erie	80 00	360 00
Fort Frances	....	....
Galt	2,870 00	1,850 00 00
Guelph	1,240 00	1,034 50
Gananoque	790 00	270 00
Georgetown	177 40	20 00
Gravenhurst	80 00	....
Hamilton	23,610 00	36,400 00
Hespeler	390 00	450 00
Hagersville	....	....
Haileybury	440 00	130 00
Hanover	279 45	30 00
Hawkesbury	916 23	453 70
Hastings V.	....	....
Hepworth	....	....
Humberstone	....	....
Huntsville	50 00	240 00
Ingersoll	520 00	405 00
Iroquois Falls	....	940 00
James Twp.	....	20 00
Kenora	490 00	520 00
Kincardine Tn.	430 00	316 00
Kitchener	3,556 00	2,364 30
Kingston City	1,520 00	3,085 00
Kingston Twp.	....	....
Kent County	4,525 00	1,635 00
Keewatin	....	....
Leamington	220 00	245 00
Lucknow	210 00	....
London	11,830 00	14,775 00
Lucan	165 00	....
Lanark V.	10 00	....
Lakefield	10 00	....
Lindsay	350 00	340 00
McDougall Tp.	895 00	1,135 00
Mattawa	280 00	390 00
Midland	1,926 50	1,116 00
Madoc	547 00	....
Massey	....	....
Merritton	230 00	220 00
Meaford	30 00	....
Matheson	....	....
Milton	....	....
Mount Forest	....	480 00
North Bay	285 00	1,225 00
Niagara Falls	10,475 00	21,600 00
Napanee	350 00	225 00
Niagara Tn.	150 00	590 00
New Liskeard	245 00	10 00
Nepean Tp.	20 00	10 00
Neustadt	....	....
Neelon & Garson	1,350 00	2,110 00
Norwood	....	....
Newmarket	....	....
Norwich North	....	....
Norwich South	....	....

SCHEDULE E—Continued.

—	To 30th April, 1918	To 30th April, 1919	—	To 30th April, 1918	To 30th April, 1919
	$ c.	$ c.		$ c.	$ c.
Norwich V.	255 00	....	St. Catharines	3,600 65	3.767 10
Ottawa	13,974 00	33,501 00	St. Thomas	2,740 00	2.300 00
Orangeville	51 85	10 00	Smith's Falls	1.610 00	3.566 24
Oshawa	1.688 95	2769 00	Stratford	4,040 00	440 00
Oakland Tp.	....	....	Simcoe	275 00	40 00
Owen Sound	353 00	175 00	St. Vincent	....	....
Oxford West Tp.	70 00	58 00	Sandwich	330 00	290 00
Oakville	....	1.960 00	Sherbrooke Tp.	....	....
Port Arthur	10,290 00	9,585 00	Sioux Lookout	200 00	400 00
Preston	1,060 00	850 00	St. Mary's	270 00	....
Picton	710 00	145 00	Stamford Tp.	....	300 00
Pakenham	....	....	Teck	....	50 00
Paris	410 00	510 00	Toronto	76,320 00	122.400 00
Parry Sound	4,434 00	470 00	Tillsonburg	415 75	110 00
Port Hope	115 00	220 00	Trenton	3,671 00	6.160 00
Peterboro	2.840 00	4,560 00	Tisdale Tp.	....	3.045 00
Pembroke	2,020 00	1,680 00	Timmins	8,130 00	5.593 50
Petrolia	570 00	40 00	Thamesville	220 00	53 00
Perth	140 00	70 00	Thessalon	550 00	146 00
Portsmouth	....	....	Thorold Tn.	4,030 00	2,415 00
Port Perry	90 00	60 00	Tavistock	....	....
Port Stanley	485 00	177 00	Thorold Tp.	1,225 00	2,884 00
Prescott	546 25	270 00	Vankleek Hill	40 00	....
Parkhill	10 00	....	Woodstock	1,195 00	770 00
Paisley	....	....	Walkerville	1,255 00	183 25
Port Colborne	5,893 00	5,320 00	Woodhouse	....	....
Port Rowan	....	....	Wallaceburg	955 00	425 00
Point Edward	....	....	Wiarton	90 00	750 00
Penetanguishene	1,425 00	868 00	Welland City	7,010 00	14.736 80
Port McNicoll	941 50	....	Windsor	10,896 35	5.350 00
Pelee Tp.	....	....	Walkerton	250 00	....
Renfrew	2,225 00	860 00	Waterloo	270 00	210 00
Rainy River Tn.	....	....	West Zorra	220 00	15 00
Rayside Tp.	....	....	Whitby Tn.	30 00	50 00
Ridgetown	....	....	York County	....	8,210 00
Sault Ste. Marie	10,922 61	18,420 50	Zorra East	....	80 00
Sturgeon Falls	150 00	100 00	Total	338,228 54	437,812 52
Sarnia	6,376 00	989 68			
Sudbury	13,915 00	11,395 00			

SCHEDULE F

Showing the number of Standard Hotels licensed under Section 146 in each License District for license year ending 30th April, 1919.

Algoma	13
Brant	16
Bruce	42
Carleton	9
Dufferin and Simcoe South	25
Dundas	13
Elgin	27
Essex (excluding Windsor)	7
Frontenac	29
Grenville	8
Grey	40
Guelph and Wellington S.	20
Halton	14
Hamilton City	43
Hastings North	21
Kenora	10
Kent	24
Lambton East	13
Lambton West	15
Lanark	20
Leeds	21
Lennox and Addington	15
Lincoln	20
Middlesex (including London)	43
Niagara Falls (including River municipalities)	19
Nipissing	16
Norfolk and Haldimand	37
Northumberland and Durham	39
Ontario	21
Ottawa City	23
Oxford	22
Parry Sound	17
Peterborough East	7
Peterborough West	22
Prescott	22
Prince Edward and Hastings S. (including Belleville)	23
Rainy River	10
Renfrew	38
Russell	21
Sault Ste. Marie	5
Simcoe N. and Muskoka	69
Stormont and Glengarry	20
Stratford City	9
Sudbury	16
Temiskaming	16
Thunder Bay (including Fort William and Port Arthur	16
Toronto City	101
Victoria and Haliburton	25
Waterloo	58
Welland (including all but River municipalities)	9
Wellington North	13
Wentworth	13
Windsor	21
York	36
	1,272

SCHEDULE G—LICENSE INSPECTORS.

License District.	Inspector.	P. O. Address.
Algoma	Jas Grigg	Bruce Mines.
Brant and Haldimand	R. J. Eacrett	Brantford.
Bruce	J. M. White	Walkerton.
Carleton	Howard Graham	44 3rd Avenue, Ottawa.
Dufferin and part Co. Simcoe	T. J. Robinson	Orangeville.
Dundas and Stormont	E. P. Foster	Morrisburg.
Elgin, including St. Thomas.	Walter Ross	St. Thomas.
Essex	J. E. Stone	Essex.
Frontenac, including Kingston	Wm. McCammon	Kingston.
Glengarry	A. McDonald	Alexandria.
Grenville	F. B. Taber, pro tem	Brockville.
Grey	M. C. Beckett	Owen Sound.
Guelph, including part Co. Wellington	Jas. O'Brien	Guelph.
Halton	John Harvey	Acton.
Hamilton, including part Co. Wentworth	Jas. Sturdy	Hamilton.
Hastings	Jno. Stokes	Tweed.
Huron North (Canada Temp. Act)	J. J. Mitchell	Wingham.
Huron South (Canada Temp. Act)	Jno. Torrance	Clinton.
Kent	T. M. French	Chatham.
Kenora	T. Dougherty	Kenora.
Lambton, East	Wm. Culbert	Wyoming.
Lambton, West, including Sarnia	Geo. Lucas	Sarnia.
Lanark	J. J. McGregor	Carleton Place.
Leeds, including Brockville	F. B. Taber	Brockville.
Lennox and Addington	W. S. Exley	Napanee.
Addington	J. McL. Wheeler, Prov. Officer	Tamworth.
Lincoln, including St. Catharines	J. W. King	St. Catharines.
Manitoulin (Canada Temp. Act)	Wm. Vincer	Mindemoya.
Middlesex, including London	J. E. Keenleyside	London.
Nipissing	L. P. Didier	North Bay.
Niagara Falls, including part Co. Welland	T. E. Ferris	Niagara Falls.
Norfolk	R. Edmonds	Simcoe.
Northumberland and Durham	G. Goodrich	Cobourg.
Ontario	L. R. Luke	Oshawa.
Ottawa, including Eastview	J. C. Enright	Ottawa.
Oxford, including Woodstock	W. Shaver	Woodstock.
Parry Sound	W. J. White	Novar.
Peel (Canada Temp. Act)	Thos. Mara	Meadowvale.
Perth (Can. Temp. Act), including Stratford (Ontario Temp. Act)	F. E. Elliott	Stratford.
Peterboro	Jos. Stewart	Peterboro.
Port Arthur & Fort William	A. R. Elliott	Port Arthur.
Prescott	Jos. Lemieux	L'Orignal.
Prince Edward, including part Co. Hastings and Belleville	R. C. Arnott	Belleville.
Rainy River	Geo. Campbell	Fort Frances.
Renfrew	Jno. Connolly	Renfrew.
Russell	W. M. Russell	Ottawa.
Sault Ste. Marie	Philip Walter	Sault Ste Marie.
Simcoe and Muskoka	W. Fisher	Orillia.

SCHEDULE G—Concluded.

License District.	Inspector.	P. O. Address.
Sudbury	T. N. Kilpatrick	Sudbury.
Temiskaming	W. S. Blackwall	Haileybury.
Toronto	E. H. Lewis	Toronto.
Toronto	A. A. Montgomery	Toronto.
Victoria and Haliburton	Wm. Thornbury	Lindsay.
Waterloo, including Kitchener and Galt	J. Winterhalt	Kitchener.
Welland	Geo. A. Ekins	Welland.
Wellington	Jno. Gordon	Drayton.
Wentworth	J. W. Dickson	Dundas.
Windsor	M. N. Mousseau	Windsor.
York	D. Mackenzie	Woodbridge.

SCHEDULE H.

A table showing the number of commitments to each gaol for drunkenness during the years 188[illegible] to 1919, both inclusive. The figures for 1918 and 1919 are compared and the increase or decrease at each place is shown.

[illegible]

RE ONTARIO GOVERNMENT DISPENSARIES

Toronto, March 12th, 1920.

Mr. J. D. Flavelle,

Chairman, Board of License Commissioners,

16 Richmond Street West, Toronto.

Dear Sir,—I have the honour to submit the following report, covering operations of the Dispensaries from June 1st to December 31st, 1919.

Public Service.

Looking back over the seven months' operations, the improvements shown, particularly from the standpoint of public service, have certainly justified your action in bringing the Dispensaries under Government control.

The first thing that happened under Government operation was an immediate reduction in prices, ranging from 15 per cent. to 25 per cent. This reduction applied particularly to this city, as several of the other localities had been furnishing the public with liquors at considerably less than the Toronto Vendors.

The second matter dealt with was the equalization of prices all over the Province, which enables the man in Port Arthur to get his supplies at exactly the same price as the man in Toronto.

The third improvement was the organization of the Mail Order Department to a state of efficiency, which permitted shipments to be made on practically the same day as the order was received. This was the great drawback under private control, and coupled with this, the Dispensaries themselves were enlarged and improved so that the public were not kept waiting.

The fourth improvement was one noticeable at once, and commented upon very favourably by the public, this being the improved quality of the liquors sold at the Dispensaries.

Accounting.

In this particular business the human element is one that has to be dealt with and considered very carefully. It was necessary that a most complete and comprehensive method of accounting should be installed.

In conjunction with Major Shiell, of Clarkson, Gordon & Dilworth, a system was put into force and brought to perfection during the first three months, which is probably the most complete of its kind ever attempted by any whole-sale or retail organization.

As all purchases are made by the Head Office, and distributed through the Central Warehouse to the retail branches, everything is charged in and charged out through the medium of stock ledgers, each and every bottle being accounted for. Stock is taken throughout the entire system each day, and a balance struck. Each Dispensary accounts each evening for its prescriptions, its stock of liquor and its cash, each of these items checking against and balancing each other. This has been brought to such a state of perfection that on sales averaging $10,000.00 per day, the balance error one way or the other is seldom more than a few cents.

For the purpose of this balance, the Dispensaries open an hour earlier in the morning and close an hour later at night than the hours of sale to the public. The Branches open at 8 a.m. and close at 5 p.m. on week days, and 8 a.m. to 2 p.m. Saturdays.

It is also possible with our system of accounting to give at any time an accurate profit and loss statement from our books alone, due to the perpetual running inventory we carry, through the medium of our stock ledgers; thus, should there be a fire or other damage, we can tell at the end of each day the exact status of the assets of the whole organization.

APPROPRIATION.

Messrs. Clarkson, Gordon & Dilworth's report to the Government called for an appropriation of $750,000.00 as the necessary capital to operate the Dispensaries.

An appropriation of $1,000,000.00 was made to be drawn as required. My estimate was $250,000.00.

We actually drew $50,000.00 per month for three months, a total of $150,000.00, and three months thereafter had paid this back entirely, with interest.

The Government, therefore, have had their loan repaid in full, and the Dispensaries are now operating on capital derived from profits entirely.

STAFF.

The policy adopted in regard to the staff at the beginning and carried out was preference to returned men. I believe at the present time 60 per cent. of our staff is comprised of returned soldiers. Practically none of these men had any previous experience in the class of work they were called upon to do, and I want to take this opportunity of paying a high tribute to their willingness, co-operation and loyalty. I know that our auditors did not expect it possible for us to attain the high standard of efficiency that has been reached in such a short time, and it certainly speaks well for the adaptability of the returned men employed, that they were able, in the course of a few months, to change over from "Field Life" to "Desk Details" and make more than good. We had only a few experienced men, secured from the previous vendors, and to the staff of the whole organization is due very great credit indeed.

PURCHASES.

During the past seven months we have been able to purchase our supplies in a satisfactory manner in spite of the many difficulties with Foreign markets. Practically 50 per cent. of our sales are imported goods, and this percentage is being increased on account of the tremendous rise in the price of domestic liquors. The latter have now been brought up to a par in price with the imported article, and this is increasing our difficulties. The public naturally take the imported article every time, when the price of the domestic line is within striking distance.

We have sufficient contracts and accepted orders placed to take care of the Dispensaries for the next six months, providing deliveries are promptly made; also foreign exchange has been purchased at low rates to take care of these commitments, thus allowing us every possible benefit obtainable.

Frankly, I see great difficulties ahead during the coming year in obtaining supplies, but we are bending every effort to overcome this and hoping for success.

Respectfully yours,

ONTARIO GOVERNMENT DISPENSARIES,

W. B. CLELAND,
General Manager.

ONTARIO GOVERNMENT DISPENSARIES

Balance Sheet 31st December, 1919

Assets			Liabilities	
Cash in Dominion Bank	$90,727 66		Accounts payable	$ 469 26
Cash on hand	1,750 00			
		$92,477 66	Surplus (Schedule 3)	376,094 02
Stock of liquors at cost price (Schedule 5)		259,145 16		
Accounts receivable		3,373 18		
Claims	$6,540 56			
Less: Reserve	1,000 00			
		5,540 56		
Empties		2,925 61		
		$363,462 17		
Machinery and equipment, furniture and fixtures (Schedule 5)		13,101 11		
		$376,563 28		$376,563 28

SCHEDULE

ONTARIO GOVERNMENT

Profit and Loss Account

—	Dispensary No. 1, Toronto		Dispensary No. 2. Toronto		Dispensary No. 3. Hamilton		Dispensary No. 4, London	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
	$ c.		$ c.		$ c.		$ c.	
Liquors purchased from former Vendors	42,076 19		25,852 67		10,020 38		11,823 50	
Liquors purchased from Central Warehouse	498,288 06		139,651 19		206,886 27		149,922 46	
Total purchases	540,364 25		165,503 86		216,906 65		161,745 96	
Deduct: Breakages recoverable	261 60		....		1,331 20		943 65	
Breakages interior and irrecoverable	1,931 79		385 72		327 60		109 59	
Stock of liquors on hand 31st December, 1919	11,268 66		7,183 44		32,573 34		12,706 91	
Cost of liquors sold	526,902 20	64.35	157,934 70	63.53	182,674 51	62.95	147,985 81	66.15
Sales	818,783 60	100	248,570 82	100	290,208 52	100	223,714 67	100
Gross profit on sales	291,881 40	35.65	90,636 12	36.47	107,534 01	37.05	75,728 86	33.85
Deduct: Discount	29,103 20	3.55	2,244 12	.90	13,437 36	4.63	12,466 72	5.57
Mail order shipping expense	24,872 73	3.04	371 78	.15	6,822 54	2.34	9,852 67	4.40
Operating expenses	72,741 27	8.88	21,572 93	8.69	25,254 39	8.71	20,410 39	9.13
	126,717 20	15.47	24,188 83	9.74	45,514 29	15.68	42,729 78	19.10
Leaving net profit	165,164 20	20.18	66,447 29	26.73	62,019 72	21.37	32,999 08	14.75

COMPARATIVE STATEMENT OF PERCENTAGE OF

Sales	40.73	12.36	14.43	11.31
Cost of liquors sold	40.62	12.17	14.08	11.41
Gross profit	40.92	12.71	15.08	10.62
Discount	42.52	3.28	19.63	18.21
Mail order shipping expense	43.52	.65	11.94	17.24
Operating expenses	40.08	11.89	13.92	11.25
Net profit	40.67	16.36	15,27	8.13

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DISPENSARIES

24th May, 1919, to 31st December, 1919

Dispensary No. 5, Windsor		Dispensary No. 6, Kingston		Dispensary No. 7, Ottawa		Total	
Amount	Per-centage	Amount	Per centage	Amount	Per centage	Amount	Percent age
$ c.		$ c.		$ c.		$ c.	
1,671 00		7,941 13		3,748 34		103,133 21	
70,527 42		82,810 04		153,805 45		1,301,890 89	
72,198 42		90,751 17		157,553 79		1,405,024 10	
3,703 13		267 97		1,194 96		7,702 51	
161 51		44 88		316 14		3,277 23	
8,645 66		6,364 16		18,066 61		96,808 78	
59,688 12	65.00	84,074 16	65.67	137,976 08	65.93	1,297,235 58	64.53
91,820 28	100	128,025 14	100	209,281 20	100	2,010,404 23	100
32,132 16	35.00	43,950 98	34.33	71,305 12	34.07	713,168 65	35.47
2,873 82	3.13	4,634 89	3.62	3,688 17	1.76	68,448 28	3.40
2,450 22	2.67	8,232 71	6.43	4,546 09	2.17	57,148 74	2.84
10,765 45	11.72	11,432 26	8.93	19,305 76	9.23	181,482 45	9.03
16,089 49	17.52	24,299 86	18.98	27,540 02	13.16	307,079 47	15.27
16,042 67	17.48	19,651 12	15.35	43,765 10	20.91	406,089 18	20.20

SALES, ETC., ATTRIBUTABLE TO EACH DISPENSARY

....	4.57	....	6.37	....	10.41	....	100
....	4.60	....	6.48	....	10.64	....	100
....	4.51	....	6.16	....	10.00	....	100
....	4.20	....	6.77	....	5.39	....	100
....	4 29	....	14.41	....	7.95	....	100
....	5.93	....	6.30	....	10.63	....	100
....	3.95	....	4.84	....	10.78	....	100

SCHEDULE

ONTARIO GOVERNMENT

Operating Expenses from

	Dispensary No. 1, Toronto		Dispensary No. 2, Toronto		Dispensary No. 3, Hamilton		Dissensary No. 4, London	
	Amount	Per-centage	Amount	Per-centage	Amount	Per-centage	Amount	Per-centage
	$ c.		$ c.		$ c.		$ c.	
Sales	818,783 80	100	248,570 82	100	290,208 52	100	223,714 67	100
Rent, light and heat	1,026 89	.12	1,051 37	.43	1,826 74	.63	564 89	.26
Repairs and maintenance	165 55	.03	105 85	.04	61 90	.02	23 86	.01
Insurance	6,194 85	.75	606 10	.25	974 30	.33	564 33	.26
Office expenses	2,818 31	.34	781 52	.31	1,167 16	.40	1,121 62	.49
Breakage	2,006 56	.24	382 78	.15	328 06	.12	171 40	.08
Claims expense	14 26	......	....	......	448 95	.15	311 08	.14
Bottling expense	....	......	122 98	.05	104 30	.04	41 80	.02
Salaries and Audit	31,113 82	3.80	10,397 56	4.19	9,907 30	3.41	9,257 03	4.14
Travelling expenses	....	......	....	......	113 83	.04	648 89	.29
Sundries	786 52	.10	159 51	.06	746 62	.26	333 92	.15
Expenses of City delivery	2,526 69	.31	39.95	.02	322 62	.12	234 89	.10
Freight and packages Central Warehouse	....	......	....	......	....	......	....	......
	46,624 93	5.69	13,647 62	5.50	16,001 78	5.52	13,273 76	5.94
Expenses of Central Warehouse and Central Office charged to Dispensaries in proportion to their sales	26,116 34	3.19	7,925 31	3.19	9,252 61	3.19	7,136 63	3.19
	72,741 27	8.88	21,572 93	8.69	25,254 39	8.71	20,410 39	9.13

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DISPENSARIES

31 May, 1919, to 31st December, 1919

Dispensary No. 5, Windsor		Dispensary No. 6, Kingston		Dispensary No. 7, Ottawa		Central Warehouse	Central Office	Total
Amount	Percentage	Amount	Percentage	Amount	Percentage			
$ c.		$ c.		$ c.		$ c.	$ c.	$ c.
91,820 28	100	128,025 14	100	209.281 20	100	....	....	2,010,404 23
400 00	.43	557 73	.43	1,059 27	.50	1,936 88	736 87	9,160 64
20 10	.02	16.45	.01	48 73	.02	121 67	66 86	630 97
340 85	.37	295 97	.23	522 50	.25	109 75	213 40	9,822 05
448 41	.49	707 48	.56	979 65	.48	62 23	6,499 22	14,585 60
146 04	.16	89 67	.07	383 09	.18	168 25	....	3,679 48
1,349 33	1.47	87 58	.07	409 56	.20	360 68	65 48	2,297 04
....	......	....	......	....	......	2,777 27	....	3,046 35
4,636 71	5.05	4,720 75	3.69	8,142 86	3.90	10,976 98	29.796 77	118,949 83
265 31	.29	253 32	.20	183 16	.09	....	1.036 33	2,500 84
94 50	.10	279 19	.22	237 51	.11	484 66	1,861 48	4,983 91
133 88	.15	339 63	.26	664 47	.31	123 59	3 63	4,385 72
....	......	....	......	....	......	7,440 02	....	7,440 02
7,835 13	8.53	7,347 77	5.74	12,630 80	6.04	23,840 62	40,280 04	181,482 45
						The above figures are charged to the several Dispensaries in proportion to their sales		
2,930 32	3.19	4,084 49	3.19	6,674 96	3.19	....	....	....
10,765 45	11.72	11,432 26	8.93	19,305 76	9.23	....	....	181,482 45

SCHEDULE 3

ONTARIO GOVERNMENT DISPENSARIES

Net Profit and Loss Account from 31st May, 1919, to 31st December, 1919

Alterations to Premises—			
Dispensary No. 1 and Central Office	$11,950 75		
Central Warehouse	160 80		
do No. 2 Toronto	297 54		
do No. 3 Hamilton	1,121 08		
do No. 4 London	2,093 69		
do No. 5 Windsor	1,542 04		
do No. 6 Kingston	76 21		
do No. 7 Ottawa	3,825 20		
		$21,067 31	
Machinery and Equipment and Furniture and Fixtures, 50% written off		13,101 11	
Interest on Loan from Province of Ontario		3,191 78	
Reserved for doubtful claims		1,000 00	
Cash over and written off		32 57	
Stock Ledger adjustments		1,172 38	
Net profit		376,094 02	
		$415,659 17	

Profit on operation of Dispensaries (Schedule 2)		$406,089 18
Profit on sales to Hospitals, etc.—		
Sales	$15,699 18	
Cost	14,076 45	
		1,622 73
		$407,711 91
Allowance by Province for handling confiscated liquors		3,711 42
Sales of empties, scrap, etc		1,753 64
Duty recovered, exchange, etc		971 10
Interest on Bank Balances		1,511 10
		$415,659 17

REPORT

OF THE

Board of License Commissioners for Ontario

ON THE OPERATION OF THE

ONTARIO TEMPERANCE ACT

FOR THE YEAR

1920

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed and Published by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1921

REPORT

OF THE

BOARD OF LICENSE COMMISSIONERS FOR ONTARIO

ON THE OPERATION OF THE

ONTARIO TEMPERANCE ACT

FOR THE LICENSE YEAR 1919-1920

Offices of the Board, 46 Richmond West,
Toronto, 1921.

To the Honourable W. E. Raney,
Attorney-General of the Province of Ontario.

Sir,—The Board of License Commissioners for Ontario has the honour to submit its Fifth Annual Report covering the operation of The Ontario Temperance Act for the license year of 1919-20, ended April 30, 1920.

The Schedules.

Schedule "A (1)" shows the number of convictions and dismissals under The Ontario Temperance Act for the license year 1919-20. The number of convictions of Standard Hotel licensees under this heading were 23, and 8 dismissals, against 2,763 convictions of non-licensees and 452 dismissals. Of the latter, 1,278 convictions and 139 dismissals were upon the charge of being found in a public place in an intoxicated condition. The previous report showed 43 convictions of Standard Hotel licensees and 9 dismissals, as compared with 2,504 convictions of non-licensees and 170 dismissals. The convictions and dismissals shown in the previous report growing out of charges of intoxication in a public place were respectively 1,158 and 110.

Schedule "A (2)" makes a similar return of convictions and dismissals in territory under The Canada Temperance Act for the license year 1919-20, showing 36 convictions and 10 dismissals, as against 29 and 3 respectively in the previous report.

Schedule "B" shows the revenue accruing to the Province under The Ontario Temperance Act from fines imposed thereunder by license districts, the total revenue from this source for the license year being $273,647.14. The previous report showed a total under this head of $231,833.80.

Schedule "C" shows the expenses for enforcing *The Ontario Temperance Act* by districts for the license year 1919-20, the total being $144,211.58, as compared with $126,580.99 in the last report.

Schedule "D" summarizes the sources which go to make up the total revenue from this Branch for the fiscal year ending 31st October, 1920, $785,788.99, as compared with $316,087.36 for the previous year, or an increase of $469,701.63. Against this total of $785,788.99 may be placed expenses of law enforcement, including salaries of Provincial and local inspectors, law costs, salaries and disbursements of members of the Board and office staff for the fiscal year, amounting to $316,055.70, leaving a credit balance of $469,733.29.

Schedule "E" shows revenues accruing to municipalities which have appointed officers under Section 120 of The Ontario Temperance Act. These municipalities have received revenues in fines up to the 30th April, 1920, of $574,186.29. The revenues from the same source received by the municipalities for the year ending the 30th April, 1919, amounted to $437,812.53, being a considerable increase over the previous year. The former amount, together with the sum received by the Province for the corresponding period, namely, $273,647.14, makes the total revenue received between the Province and the municipalities of $847,833.43, as compared with $669,646.32 in last report.

Schedule "F" shows the distribution of Standard Hotels licensed under Section 146, by license districts, for the license year 1919-20, numbering 1,281.

Schedule "H" shows the number of commitments to jail for drunkenness from 1885 to 1920, inclusive.

PERMITS.

Manufacturers' permits issued under Section 121 for the use of alcohol and other liquors for manufacturing purposes, for the license year, numbered 639, supervision of the use of liquor for these purposes having become an important department of the Board's work.

Permits to manufacturers of native wine under Section 44 for the same period numbered 25.

CONFISCATED LIQUOR.

The value of confiscated liquor which was sold to the Dispensaries during the fiscal year ending October 31, 1920, was $111,963.74. A considerable quantity of confiscated liquor was donated to Provincial and other hospitals for medicinal uses. No liquor of doubtful quality has been assigned for medicinal uses either in hospitals or on prescriptions in stores of vendors under the Act.

Value of confiscated liquor on hand 31st October, 1920, $108,138.75.

ONTARIO GOVERNMENT DISPENSARIES.

The closing section of this Report is devoted to information respecting Ontario Government Dispensaries for the calendar year 1920, beginning with a review by Mr. W. B. Cleland, General Manager up to November 1st, 1920, when he was succeeded in that position by Mr. A. H. Birmingham, who had been Secretary-Treasurer from the time the Dispensaries came into the Government's hands. Mr. Cleland resigned in order to feel free to attend to other interests, but the Board is gratified to be able to retain his services for part of his time as Advisory Expert. The establishment of the Dispensaries on so satisfactory a working basis is due chiefly to the judgment, knowledge, and ability of Mr. Cleland. You are referred to his review and the series of statistical tables from the Auditors' Report prepared by Messrs. Clarkson, Gordon and Dilworth.

Besides the Head Office of the Dispensaries there are seven branches, namely, No. 1, at 29 Front Street East, Toronto, where the Head Office is also located; No. 2, at 1269 Dundas Street West, Toronto, near Dovercourt; No. 3, at Hamilton; No. 4, at London; No. 5, at Windsor; No. 6, at Kingston; and No. 7, at Ottawa. Preparations are under way to open No. 8 at Fort William, which should be in operation in a very few weeks.

Mr. Cleland's review and the accountant's tables speak for themselves, and are so clear and complete as not to require elaboration here. Some information derived from the Auditors' Report, apart from the schedules, may, however, be here condensed.

The gross profits resulting from sales amounted to	$1,380,920 35	41.06%
From this must be deducted the following:		
Discount on sales to chemists and doctors	$155,541 27	4.62%
Mail order shipping expense	70,830 24	2.11
Operating expenses, including Central Office and Central Warehouse expense	294,531 77	8.76
	$520,903 28	15.49%
Leaving a net profit on operations of	860,017 07	25.57
	$1,380,920 35	

The Board's policy is to sell liquors at the same price throughout the Province and to pay the expense of special packing and express charges. Salaries, etc., at the Dispensaries compose the largest expense item, namely, $186,519.39, but constitute only 5½% on the total sales for 1920 of $3,363,020.64. It must, moreover, be borne in mind that the bulk of the sales are made in single bottles, and that record has to be kept of every bottle at the Head Office, calling for a degree of detail work hardly known to any other business.

In answer to the argument sometimes heard, that prices of liquor at the Dispensaries should be lower, it may be said that were it practicable to restrict liquor prescriptions to those based on "actual medicinal need," as stipulated in the Ontario Temperance Act, the volume of business transacted would, in the Board's opinion, drop to one-fourth what it is at present. But could such restriction be made, the overhead expense would become a much heavier burden upon the individual prescription, and the genuine patient might have to pay even more than now for medicinal liquor. It is therefore manifest that lowered prices would inure to the advantage of the majority, who are believed to be presenting evasive prescriptions, and who are entitled, not to such advantage, but perhaps to attention from a very different part of the Act, could proof be obtained.

The Dispensaries have been established upon their own profits. In 1919, when they were taken over from the former Vendors, $150,000 was for a few months advanced by the Government, but this sum was returned the same year with interest. During 1920 the Government received the sum of $250,000 as revenue from the Dispensaries.

BORDER RUM-RUNNING.

Conditions in Essex County probably warrant a special paragraph. With removal of the ban upon liquor importations into the Province, by abrogation of the Dominion Order-in-Council on January 1st, 1920, naturally importations were resumed, and when shortly after, the United States prohibition law came into effect in that country, an incentive toward great profits was at once created, to be gained out of liquor imported into Ontario, and more or less surreptitiously passed across the border. The narrow waters of the Detroit River and adjacent waters, often facilitating a ten-minute dash across, and the proximity of a city of one million population stimulated the incentive referred to, which found operators all along the Ontario-U.S. border, from the extreme East to the extreme West.

The conditions cited, however, focussed the most marked activity of this kind toward the Detroit River.

It is safe to say that the prospect of large illicit gains attracted many undesirables to Detroit and vicinity, including both sides of the border. Police Commissioner Inches, of Detroit, is on record as stating that this illicit traffic "has brought to Detroit the most desperate criminals of the United States, and when they are not rum-running they turn their talents to burglary and highway robbery. They debauch formerly honest men with their easy money, and because of them the Detroit Police Department has had to fight crime as no other city in the whole United States has had to fight it." Commissioner Inches added that he knew of more than fifty men who had made over $100,000 each during six months bringing liquor across the river from Windsor and vicinity to Detroit and other near Michigan points. The picture of resultant demoralization which this official draws is believed to be by no means overdrawn.

At the same time it has been felt that the measures taken by the U.S. authorities to prevent and punish the traffic were inadequate, and that had such been adequate the illicit traffic would not have gained the headway it did. The chief instrument in checking the traffic and reducing it to what is now believed to be but a fraction of its proportions last midsummer, is believed to have been the vigorous work of Ontario officers, combined with penalties carrying not only large fines, but imprisonment as well. Many gaol sentences were imposed, in addition to large fines and confiscations of contraband liquor, and the result has been most salutary.

The Board felt it a duty to fight this illicit traffic, not to protect the United States, but to enforce Ontario's own laws. The Ontario Temperance Act clearly defines that a citizen's right to have liquor for beverage purposes is confined to the private dwelling in which he resides. If he has a truck load of liquor headed for the border, or if he has it in a camouflaged residence at the water's edge, or concealed in a barn or packed as other goods, he violates the law. These and other ingenious devices were practised, and often succeeded because officers could not be everywhere, and our water border extends many hundreds of miles. Others without visible financial resources and with only the humblest and poorest furnished residences claimed to have purchased scores and sometimes hundreds of cases of liquor for personal consumption, a plea that could not be maintained when confronted before a Police Magistrate with the obligation to put up a credible story as to the ultimate use intended.

Reference having been made to the U. S. prohibition law, it may be useful to remark that some of its features are not correctly understood. Under Article 9, Section 58, it is provided that any person can apply for a license for the sale of intoxicating liquor for non-beverage purposes. It is obvious that faithful observance of restrictions will be hard to obtain from all licensees, history of liquor laws being ample on that point. Moreover, under Clause (*d*), page 29, of the Regulations, Jews have special permission to have liquor in their houses. For these and other reasons it is straining the term to call the United States "bone dry."

RELATIONS WITH PHYSICIANS.

The Board regrets that a few physicians appear to misunderstand its functions and aims regarding them. It will be remembered that at the last Session of the Legislature, specific authority was conferred upon the Board to suspend at the

Dispensaries for due cause physicians, dentists or veterinary surgeons. This power the Board considered as intended to be exercised only in cases where it was convinced that members of those professions were deliberately evading or violating the Act in some way.

The Board had not desired to have this authority conferred upon it, and would rather have avoided it. It mooted to the Government a plan to confer the authority to discipline physicians upon the College of Physicians and Surgeons or the Ontario Medical Council, and even discussed the matter with the Executive of the College, who, however, refused to entertain the proposal. In a letter to Hon. Mr. Raney, Attorney-General, dated May 4th, 1920, Dr. H. Wilberforce Aikins, Registrar of the College, set forth the views of the College on this point as follows:—

> "The College will welcome legislation clothing the License Commission with the widest powers necessary, to deal with infractions of the Act, whether on the part of the laity or of the profession, and it will allow no false sympathy for delinquent members of the College to in any way modify its fixed determination, to act in unison with the Government and the Board, and to the letter and in spirit, it will implement, as far as lies in its power, mandates of the Legislature, giving to the Board authority to exercise in fullest degree the prerogatives conferred upon it in this connection."

Whatever action the Board has taken, therefore, was under Legislative authority, and it was not a case of three laymen wantonly interfering with members of a learned profession. Interference, moreover, has been found necessary only with a small minority of the profession.

The Board's view now is that liquor prescriptions upon Dispensaries should rarely exceed fifty per month, and that when one hundred per month are approximated or exceeded, explanation may properly be sought. These views have been laid before the profession at large, and have been pressed when necessary upon doctors who are believed to have been prescribing abnormally. The number stated has no relation to six-ounce liquor prescriptions upon druggists, which it is hoped are less liable to abuse, though occasionally instances of abuse in such prescriptions have arisen and have called for action. It may be advisable in future for closer attention to be paid to liquor prescriptions upon druggists.

The doctors whom the Board has suspended at Dispensaries were chiefly those who persistently issued quart liquor prescriptions on Dispensaries at from 100 to 200 monthly. Semi-monthly returns from the Inspection Department as a rule reveal the same doctors high, as compared with the great majority always low, many in single figures. At the same time the tendency is downward, various doctors having modified their liquor prescriptions in response to the Board's representations. It is rarely that two hundred in a month on Dispensaries are now reached by a doctor. The high water mark of 2,005 in one month, reached in October, 1918, by a certain doctor, is now never approached. This same doctor has mended his ways; in the last half of 1920 he kept below 50 quart prescriptions per month. Suspensions at Dispensaries have been made in flagrant cases under the amendment above discussed, including a few doctors addicted to inebriety. In one case a doctor was suspended at the Dispensaries who had also in six months issued about 25,000 liquor prescriptions on local druggists; in his case representations to druggists effectually curbed his irregularities in that quarter also. Occasionally a doctor arrogates to himself authority to issue liquor prescriptions so that people may have liquor against a distant eventuality, or, as he claims, to thwart orders by the case from Montreal. It is obvious that the line between allegedly beneficent prescriptions of that sort and evasive prescriptions for beverage uses is very thin. The Board holds that if a doctor is to exercise broad discretion, the Act should be altered to admit of it, but not otherwise. It is for the Legislature to grant discretion of that kind, not the Board. Moreover, pitiful examples have reached the Board by the avenue of distressed wives or other relatives of the evil results upon families of liquor prescriptions issued by lax physicians who may have argued themselves into a state of self-justification. During 1920 there were thirty-seven convictions of physicians for offences against the Ontario or Canada Temperance Acts, from drunkenness up to violation of Sections 40, 41 or 51, with nineteen fines under $100, two at $100, two at $150, six at $200, one at $250, two at $300, two at $400, one at $500, one at $700, and one at $1,000.

The average number of liquor prescriptions upon Dispensaries issued by all doctors issuing such, is under twenty-five per month. Besides the above, the Board understands that the medical profession in the Province of Alberta, with its comparatively sparse population and vast distances, has pronounced against more than fifty liquor prescriptions being issued per month, and each prescription at that to be not more than eight or ten ounces. A similar deliverance is understood to have been issued by the medical profession of British Columbia, setting the number at one hundred per month, with a similar quantity to that in Alberta. As compared with those Provinces, the provisions for getting liquor for medicinal uses in Ontario are much more liberal. The six-ounce prescriptions upon druggists were thought, when the Act was framed, to provide for the great bulk of such requirements, but the quart provision for prescriptions upon Dispensaries was also arranged for the benefit of chronic and exceptional cases. No other Province has so broad a provision as that with reference to one quart procurable from Dispensaries. To the Board's regret, it believes this quart provision has been greatly abused.

Although the Board's circulars to the medical profession have met with some criticism, there is no reason to think that the profession at large disagrees with them. The quotation from Dr. H. Wilberforce Aikins' letter above bears on this point, besides which the Board has had letters from individual doctors, from which a couple of quotations may be made. One Toronto doctor wrote the Board thus:

> "I wish to thank you for your letter of December 24, 1920, *re* the number of prescriptions issued per month by physicians. With you, I am of the opinion that fifty per month should not be exceeded. I am sure if it could be left to the recommendation of the physician, ten a month would be ample, except in severe epidemics, as of influenza.
>
> "We never prescribe quarts of castor-oil or other medicines, so should not prescribe quarts of whiskey. Used strictly as a medicine six ounces is quite enough."

Another doctor wrote:

> "Your circular letter of the 24th December to hand, in which you state that twenty-five, or less, prescriptions on the Dispensaries a month should be sufficient. That sounds quite rational."

This doctor based his reference to twenty-five or less on the Board's mention of the monthly average of all physicians upon Dispensaries. The Board, in its desire not to be too drastic, doubled that figure when it stated that fifty such per month should not be exceeded.

Confirmation by druggists is occasionally offered of the Board's course. It is in receipt of a letter from a druggist in an Ontario city who had learned of the circular referred to, and who said:

> "I have had some experience handling doctors' liquor prescriptions, and every other druggist here whom I have spoken to tells the same tale. Scarcely any man who

procures liquor by means of a doctor's prescription needs it for medicinal purposes. Even twenty-five prescriptions a month is an absurdly large number for any doctor to issue, without making a bartender of himself."

By way of further bearing on the subject of liquor prescriptions, and as showing that the Board's administration has not been over-drastic, or foreign to the best medical opinion, may be mentioned the fact that the Ontario Medical Council, on June 27th, 1918, passed a resolution to the following effect:

> **"We are of the opinion that the quantity of alcoholic liquor for internal use should be limited to eight ounces."**

The Board thinks it evident from the above showing that its course toward physicians in the first place is based upon the Act itself, and, in the second place, is characterized by care and moderation and a desire not to abuse its powers.

The Board's Assistants.

I desire to express special appreciation of the loyal and efficient services ot the Provincial and Local Inspectors and Officers of the Board's staff. The year 1920 has been more than usually trying in many respects, long hours and hardships having often been borne with patience and spirit by the Board's outside officers, sometimes in the face of disparagement that was ruffling to men actuated only by a sense of duty. It has been a pleasure to the Board to give these men all the backing in its power, and also to recognize the readiness of the Government to grant the Board and Inspectors its moral and practical support on all occasions. Some of these County Inspectors have, in view of attaining the age of seventy, come under the operation of the Superannuation Act, and have retired with long and creditable records. The Board wishes these men many years in useful and happy retirement.

The Board also gratefully acknowledges the valuable assistance rendered in enforcement of the Ontario Temperance Act by the Provincial Police under Superintendent Rogers. Co-operation has been the rule between the Board's Inspectors and the Provincial Police, and this will no doubt continue and be more perfected as time goes on.

At the close of 1920 the Board and the License Department were, by Order-in-Council, transferred from the jurisdiction of the Hon. the Provincial Secretary to that of the Hon. the Attorney-General, with the object of greater unifying of the forces bearing on law enforcement, since the Provincial Police and the law officers were already under the Attorney-General.

Closing Remarks.

This Report should not close without acknowledgment of the long and able services of Eudo Saunders, Esq., Solicitor to the Board, as well as for seventeen years Chief Officer of the License Department. Mr. Saunders has sought and been granted retirement under the Superannuation Act. He has served successive Governments since 1904 with ability, his legal knowledge having been of great value from time to time in connection with legislation as well as in the administration of the License Department. He leaves with the best wishes of the Board and its staff and officers for many years of pleasant, well-occupied leisure earned by long and useful service. He is succeeded as Chief Officer of the Department by Mr. Jos. F. Mowat, for many years the efficient Accountant.

With each year and the growth of the Province in population and wealth, the duties of the Board and staff increase in complexity and volume. Instead of the duties having been eased by substitution of the Ontario Temperance Act for the old Liquor License Act, they have been made much heavier, as must be obvious to any close observer of the effects and demands of the newer legislation.

Under a provision in the Dominion law, the Counties of Huron and Perth passed on December 1st, 1920, from the operation of the Canada Temperance Act to that of the Ontario Temperance Act. This leaves only Peel County and the District of Manitoulin under the Canada Temperance Act, and measures are reported initiated in Peel to arrange for its transfer also. These changes will aid toward more uniform law enforcement.

Respectfully submitted,

J. D. Flavelle,

Chairman.

SCHEDULE A (1)

Statement showing number of convictions and dismissals of cases for infractions of the Ontario Temperance Act for the license year ending April 30th, 1920.

License District.	Against Holders of Standard Hotel Licenses.		Against Non-Licensees.	
	No. of Convictions.	No. of Dismissals.	No. of Convictions.	No. of Dismissals.
Algoma	2		38	6
Brant and Haldimand			93	8
Bruce	1	1	23	2
Carleton			75	
Dufferin and part Co. Simcoe			7	1
Dundas and Stormont			104	17
Elgin	1		20	6
Essex			10	3
Frontenac, including Kingston			31	11
Glengarry	1		56	33
Grenville	1		40	4
Grey			29	23
Guelph and part Co. Wellington			11	3
Halton			91	4
Hamilton and part Co. Wentworth		1	44	12
Hastings			22	7
Huron, North (under Canada Temperance Act)			13	2
Huron, South (under Canada Temperance Act)			25	
Kent			6	6
Kenora			8	2
Lambton, East			15	6
Lambton, West			42	6
Lanark			43	9
Leeds, including Brockville			116	12
Lennox and Addington			33	2
Lincoln			25	12
Manitoulin (Canada Temperance Act)			10	2
Middlesex, including London			47	12
Nipissing	4		47	
Niagara Falls and part Co. Welland			198	
Norfolk			11	7
Northumberland and Durham	1		35	9
Ontario			53	11
Ottawa, including Eastview			22	5
Oxford			5	3
Parry Sound			58	21
Peel (under Canada Temperance Act)				
Perth (under Canada Temperance Act), including Stratford (Ontario Temperance Act)			29	9
Peterboro	1		15	4
Port Arthur and Fort William			32	5
Prescott			25	3
Prince Edward and part Co. Hastings	1		60	5
Rainy River			53	5
Renfrew			71	9
Russell			65	9
Sault Ste. Marie			20	
Simcoe and Muskoka	1		21	3
Sudbury			120	15
Temiskaming			312	17
Toronto			57	43

SCHEDULE A (1)—Continued.

License District.	Against Holders of Standard Hotel Licenses.		Against Non-Licensees.	
	No. of Convictions.	No. of Dismissals.	No. of Convictions.	No. of Dismissals.
Victoria and Haliburton			80	6
Waterloo	9	6	37	12
Welland			60	11
Wellington			15	1
Wentworth			2	
Windsor			180	26
York			3	2
Totals	23	8	2,763	452
Totals, previous report	43	9	2,504	470

Included in the foregoing cases are 1,278 convictions and 139 dismissals under charges of being found in a public place in an intoxicated condition, as compared with 1,158 and 110 respectively in previous report.

SCHEDULE A (2)

Statement showing number of convictions and dismissals under charges of violations of the Canada Temperance Act during the year ending April 30th, 1920.

License District.	Convictions.	Dismissals.
Huron, North	1	2
Huron, South	12	4
Manitoulin	2	1
Peel	6	2
Perth (excluding the City of Stratford)	15	1
Totals	36	10
Totals, previous report	29	3

SCHEDULE B

Statement showing amounts collected and payable to the Province for fines imposed under the Ontario Temperance Act, in each License District, for the License year ending the 30th April, 1920.

	$	c.
Algoma	1,995	25
Brant and Haldimand,	2,330	40
Bruce	2,160	00
Carleton	10,700	00
Dufferin and Simcoe	927	45
Dundas and Stormont	5,485	57
Elgin	1,390	00
Essex	2,105	00
Frontenac	1,830	00
Glengarry	3,148	00
Grenville	1,823	00
Grey	2,250	00
Guelph	1,320	00
Halton	250	00
Hamilton	9,420	00
Hastings	1,800	00
Kent and Chatham	769	20
Kenora	712	00
Lambton East	285	00
Lambton West	1,170	00
Lanark	2,280	00
Leeds	10,487	89
Lennox and Addington	920	00
Lincoln	3,455	00
Middlesex	10,610	00
Nipissing	6,578	00
Niagara Falls	12,365	00
Norfolk	640	00
Northumberland and Durham	3,000	00
Ontario	5,815	40
Ottawa	4,775	00
Oxford	1,160	00
Parry Sound	360	00
Peterborough	3,017	00
Port Arthur and Fort William	5,598	34
Prescott	4,930	00
Prince Edward and part of Hastings	7,896	00
Rainy River	1,852	00
Renfrew	7,260	00
Russell	7,313	00
Sault Ste. Marie	2,620	00
Simcoe and Muskoka	3,428	55
Sudbury	20,360	00
Temiskaming	21,218	54
Toronto	10.826	30
Victoria and Haliburton	4,831	00
Waterloo	12,865	00
Welland	10,270	00
Wellington	1,145	00
Windsor	31,254	25
Wentworth	200	00
York	600	00
	271.802	14
ADDITIONAL		
Manitoulin		
Huron North	180	00
Huron South	430	00
Perth	1.235	00
Peel		
Total	273,647	14
Total previous report.	231,833	80

SCHEDULE C

Statement showing expenses of enforcing Ontario Temperance Act in each License District for the license year ending 30th April, 1920.

	$	c.
Algoma	2,956	62
Brant and Haldimand	2,673	13
Bruce	2,124	78
Carleton	3,337	23
Dufferin	2,203	79
Dundas and Stormont	4,717	50
Elgin	1,775	15
Essex	2,699	20
Frontenac	3,022	85
Glengarry	2,592	72
Grenville	2,011	03
Grey	3,255	80
Guelph	1,971	79
Halton	1,475	62
Hamilton	4,212	02
Hastings	1,966	42
Kent	1,571	65
Kenora	1,379	40
Lambton, East	1,429	87
Lambton, West	2,003	29
Lanark	2,579	54
Leeds	4,757	51
Lennox and Addington	2,263	26
Lincoln	2,105	27
Middlesex	3,324	51
Nipissing	3,450	69
Niagara Falls	2,413	55
Norfolk and Haldimand	2,172	67
Northumberland and Durham	1,985	47
Ontario	2,055	16
Ottawa	2,540	77
Oxford	1,478	64
Parry Sound	1,701	82
Peterborough	3,509	92
Port Arthur and Fort William	3,519	86
Prescott	1,946	75
Prince Edward and part of Hastings	2,839	34
Rainy River	1,428	55
Renfrew	2,234	62
Russell	3,710	25
Sault Ste. Marie	1,139	18
Simcoe and Muskoka	3,394	50
Sudbury	11,226	56
Temiskaming	4,428	96
Toronto	3,748	42
Victoria and Haliburton	2,380	32
Waterloo	2,873	45
Welland	2,020	11
Wellington	1,016	18
Wentworth	986	89
Windsor	6,295	73
York	1,961	72
	142,870	03
ADDITIONAL		
Huron, North	79	90
Huron, South	114	58
Perth	1,084	57
Manitoulin	62	50
Total	144,211	58
Total previous report	126,580	99

SCHEDULE D

Statement showing revenue from License Branch for the fiscal year ending 31st October, 1920.

Vendors' License Fees	5 00
Standard Hotel Fees	1,469 00
Fines	672,222 20
Confiscated Liquor	111,963 74
Sundries	129 05
Total	785,788 99
Total previous report	316,087 36

SCHEDULE E

Showing fines imposed under the Ontario Temperance Act, paid to the Municipalities where special officers have been appointed under Section 120 of the Ontario Temperance Act for license years 1918-19 and 1919-20 respectively.

—	To 30th April, 1919	To 30th April, 1920	—	To 30th April, 1919	To 30th April, 1920
	$ c.	$ c.		$ c.	$ c.
Amherstburg	...	199 00	Eastview	510 00	...
Arnprior	1,200 00	...	Dymond	...	500 00
Aylmer	135 00	195 00	Englehart	200 00	...
Acton	...	10 00	Elmira	20 00	210 00
Ailsa Craig	200 00	...	Edwardsburg	...	...
Alexandria	...	...	Elora	...	...
Brantford	7,968 75	6,964 00	Fort William	13,460 00	20,462 00
Bancroft	...	35 00	Ford City	500 00	5,154 25
Bowmanville	490 00	140 00	Fort Erie	360 00	10 00
Brighton	...	...	Fort Frances	...	780 00
Brockville	2,529 40	2,102 95	Galt	1,850 00	1,030 00
Blenheim	19 00	...	Guelph	1,034 50	3,898 00
Blenheim Tn	...	50 00	Gananoque	270 00	600 00
Belleville	2,845 00	2,188 26	Georgetown	20 00	71 00
Bradford	65 00	10 00	Gravenhurst	...	270 00
Blind River	1,160 00	1,490 00	Hamilton	36,400 00	29,900 00
Burlington	240 00	165 00	Hespeler	450 00	990 00
Burk's Falls	...	...	Hagersville	...	10 00
Bridgeburg	1,485 00	270 00	Haileybury	130 00	1,672 00
Barrie	360 00	554 00	Hanover	30 00	645 00
Blandford	...	...	Hawkesbury	453 70	2,510 00
Bayham	...	...	Hastings	...	...
Bothwell	...	...	Hepworth	...	25 00
Beverly	...	240 00	Humberstone	...	...
Cobourg	425 00	985 00	Huntsville	240 00	190 00
Colborne	...	75 00	Ingersoll	405 00	350 00
Carleton Place	40 00	544 00	Iroquois Falls	940 00	1,835 00
Cobalt	1,771 00	5,620 00	James Twp.	20 00	...
Cochrane	1,887 30	3,510 00	Kenora	520 00	837 00
Courtright	419 50	...	Kincardine	316 00	...
Copper Cliff	6,035 00	5,190 00	Kitchener	2,364 30	6,535 25
Chapleau	700 00	800 00	Kingston City	3,085 00	6,053 00
Campbellford	50 00	520 00	Kingston Twp.	...	...
Chesley	...	...	Kent County	1,635 00	6,680 00
Cardinal	40 00	40 00	Keewatin	...	...
Charlton	...	20 00	Leamington	245 00	1,928 00
Coldwater	...	...	Lucknow	...	175 00
Chelmsford Tn.	...	20 00	London	14,775 00	18,447 00
Cornwall	300 00	2,230 00	Lucan	...	50 00
Cayuga	...	...	Lanark V.	...	...
Collingwood	550 00	730 00	Lakefield	...	30 00
Cannington	...	35 33	Lindsay	340 00	1,755 00
Chatham	890 00	2,310 00	McDougall Tp.	1,135 00	...
Clifford	...	...	Mattawa	390 00	1,444 00
Crowland	10,835 00	11,400 00	Midland	1,116 00	555 00
Calvert	...	...	Madoc	...	...
Chapman	...	...	Massey	...	500 00
Coleman	...	...	Merritton	220 00	200 00
Dunnville	240 00	95 00	Meaford	...	...
Dresden	420 00	730 00	Matheson	...	...
Dutton	...	...	Milton	...	...
			Mount Forest	480 00	380 00
Drury, Denison and Graham	3,205 00	1,050 00	Magnetawan	...	...
Dundas	1,820 00	780 00	North Bay	1,225 00	4,195 00
Dryden	...	25 00	Niagara Falls	21,600 00	16,431 00
Deseronto	...	800 00	Napanee	225 00	455 00

SCHEDULE E—Continued.

—	To 30th April, 1919	To 30th April, 1920	—	To 30th April, 1919	To 30th April, 1920
	$ c.	$ c.		$ c.	$ c.
Niagara Tn.	590 00	30 00	Ridgetown	....	....
New Liskeard	10 00	10 00	Sault Ste. Marie	18,420 50	27,456 70
Nepean	10 00	260 00	Sturgeon Falls	100 00	470 00
Neustadt	....	....	Sarnia	989 68	1,585 00
Neelon & Garson	2,110 00	3.095 00	Sudbury	11,395 00	19,280 00
Norwood	....	....	St. Catharines	3,767 10	6,193 00
Newmarket	....	....	St. Thomas	2,300 00	2,700 00
Norwich North	....	....	Smith's Falls	3,566 24	4.050 00
Norwich V.	....	60 00	Stratford	440 00	930 00
Nipigon	....	1,580 00	Simcoe	40 00	277 00
Ottawa	33,501 00	36,180 00	St. Vincent	....	....
Orangeville	10 00	20 00	Sandwich	290 00	5,240 50
Oshawa	2,769 00	9,287 90	Sherbrooke Tp.	....	....
Oakland Tp.	....	....	Sioux Lookout	400 00	1,000 00
Owen Sound	175 00	1.650 00	St. Mary's	....	330 00
Oxford West Tp.	58 00	....	Stamford Tp.	300 00	....
Oakville	1,960 00	3,135 00	Teck	50 00	1.790 00
Port Arthur	9,585 00	22.176 00	Toronto	122,400 00	135,500 00
Preston	850 00	2,070 00	Tillsonburg	110 00	....
Picton	145 00	,610 00	Trenton	6,160 00	3,446 00
Pakenham	....	....	Tisdale Tp.	3,045 00	6.882 25
Paris	510 00	570 00	Timmins	5,593 50	9.147 50
Parry Sound	470 00	2,975 00	Thamesville	53 00	710 00
Port Hope	220 00	....	Thessalon	146 00	396 00
Peterboro	4,560 00	2.220 00	Thorold Tn.	2,415 00	....
Pembroke	1,680 00	1.260 00	Thorold Tp.	2,884 00	153 50
Petrolia	40 00	420 00	Vankleek Hill	....	10 00
Perth	70 00	2,050 00	Woodstock	770 00	960 00
Portsmouth	....	....	Walkerville	183 25	5.436 50
Port Perry	60 00	....	Woodhouse	....	....
Port Stanley	177 00	578 00	Wallaceburg	425 00	995 00
Prescott	270 00	5,953 90	Wiarton	750 00	300 00
Parkhill	....	....	Wellend Tn.	14,736 80	6,934 50
Paisley	....	....	Windsor	5,350 00	30,031 25
Port Colborne	5,320 00	4,981 75	Walkerton	....	220 00
Port Rowan	....	....	Waterloo	210 00	695 00
Point Edward	....	....	West Zorra	15 00	....
Penetanguishene	868 00	709 00	Whitby Tn.	50 00	....
Port McNicoll	....	200 00	Winchester	....	500 00
Pelee Tp.	....	....	York County	8,210 00	8.470 00
Renfrew, Tn.	860 00	130 00	Zorra, East	80 00	....
Rainy River	....	....			
Rayside Tp.	....	....	Total	437,812 52	573,676 29

SCHEDULE F

Showing the number of Standard Hotels licensed under Section 146 in each License District for license year ending 30th April, 1920.

Algoma	11
Brant	23
Bruce	42
Carleton	7
Dufferin and Simcoe South	23
Dundas and Stormont	24
Elgin	24
Essex (excluding Windsor)	11
Frontenac	30
Grenville	8
Grey	39
Guelph and Wellington S.	20
Halton	13
Hamilton City	40
Hastings North	20
Kenora	8
Kent	24
Lambton East	13
Lambton West	17
Lanark	20
Leeds	21
Lennox and Addington	18
Lincoln	22
Middlesex (including London)	43
Niagara Falls (including River municipalities)	22
Nipissing	20
Norfolk and Haldimand	29
Northumberland and Durham	38
Ontario	17
Ottawa City	26
Oxford	24
Parry Sound	20
Perth	9
Peterborough	26
Prescott	23
Prince Edward and Hastings S. (including Belleville)	26
Rainy River	10
Renfrew	37
Russell	22
Sault Ste. Marie	8
Simcoe N. and Muskoka	71
Sudbury	19
Temiskaming	16
Thunder Bay (including Fort William and Port Arthur)	18
Toronto City	96
Victoria and Haliburton	24
Waterloo	54
Welland (including all but River municipalities)	10
Wellington North	15
Wentworth	16
Windsor	27
York	37
	1,281

SCHEDULE G—LICENSE INSPECTORS.

License District.	Inspector.	P. O. Address.
Algoma	Jas Grigg	Bruce Mines.
Brant	R. J. Eacrett	Brantford.
Bruce	J. M. White	Walkerton.
Carleton	Howard Graham	44 3rd Avenue, Ottawa.
Dufferin and part Co. Simcoe	T. J. Robinson	Orangeville.
Dundas and Stormont	E. P. Foster	Morrisburg.
Elgin, including St. Thomas.	Walter Ross	St. Thomas.
Essex	J. E. Stone	Essex.
Frontenac, including Kingston	Wm. McCammon	Kingston.
Glengarry	Wm. McCready	Alexandria.
Grenville	E. E. Adams	Ventnor.
Grey	M. C. Beckett	Owen Sound.
Guelph, including part Co. Wellington	Jas. O'Brien	Guelph.
Halton	John Harvey	Acton.
Hamilton, including part Co. Wentworth	Jas. Sturdy	Hamilton.
Hastings		Tweed.
Huron	W. T. Pellow	Goderich.
Kent	Matthew Side	Chatham.
Kenora		Kenora.
Lambton, East	Wm. Culbert	Wyoming.
Lambton, West, including Sarnia		Sarnia.
Lanark	J. J. McGregor	Carleton Place.
Leeds, including Brockville	F. B. Taber	Brockville.
Lennox and Addington	W. S. Exley	Napanee.
Addington	J. McL. Wheeler, Prov. Officer	Tamworth.
Lincoln, including St. Catharines	J. W. King	St. Catharines.
Manitoulin (Canada Temp. Act)	Wm. Vincer	Mindemoya.
Middlesex, including London	J. E. Keenleyside	London.
Nipissing	L. P. Didier	North Bay.
Niagara Falls, including part Co. Welland	T. E. Ferris	Niagara Falls.
Norfolk	R. Edmonds	Simcoe.
Northumberland and Durham	G. Goodrich	Cobourg.
Ontario		Oshawa.
Ottawa, including Eastview	J. C. Enright	Ottawa.
Oxford, including Woodstock		Woodstock.
Parry Sound	W. J. White	Novar.
Peel (Canada Temp. Act)		Meadowvale.
Perth (Can. Temp. Act), including Stratford (Ontario Temp. Act)	F. E. Elliott	Stratford.
Peterboro	Jos. Stewart	Peterboro.
Port Arthur & Fort William	A. R. Elliott	Port Arthur.
Prescott	Arthur De Haitre	Hawkesbury.
Prince Edward, including part Co. Hastings and Belleville	F. J. Naphan	Belleville.
Rainy River	Geo. Campbell	Fort Frances.
Renfrew	Jno. Connolly	Renfrew.
Russell	W. M. Russell	Ottawa.
Sault Ste. Marie	Philip Walter	Sault Ste Marie.
Simcoe and Muskoka	J. R. Reid	Orillia.

SCHEDULE G—Concluded.

License District.	Inspector.	P. O. Address.
Sudbury	T. N. Kilpatrick	Sudbury.
Temiskaming	W. S. Blackwall	Haileybury.
Toronto	A. A. Montgomery	Toronto.
Victoria and Haliburton	Wm. Thornbury	Lindsay.
Waterloo, including Kitchener and Galt	E. Zinkann	Kitchener.
Welland	Geo. A. Ekins	Welland.
Wellington		
Wentworth	J. W. Dickson	Dundas.
Windsor	M. N. Mousseau	Windsor.
York	D. Mackenzie	Woodbridge.

Name of gaol.

Barrie
Belleville
Brantford
Brampton
Brockville
Bracebridge
Cayuga
Cornwall
Cobourg
Chatham
Fort Frances
Goderich
Guelph
Gore Bay
Hamilton
Kingston
Kitchener
Kenora
London
Lindsay
L'Orignal
Milton
Napanee
North Bay
Ottawa
Owen Sound
Orangeville
Perth
Picton
Pembroke
Peterborough
Port Arthur
Parry Sound
Simcoe
St. Catharines
Sarnia
Stratford
Sandwich
St. Thomas
Sault Ste. Ma
Sudbury
Toronto
Walkerton
Woodstock
Welland
Whitby

Lock-ups:

Atikokan
Burk's Falls
Byng Inlet
Cobalt
Killarney
Manitowan
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Totals

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SCHEDULE H.

A table showing the number of commitments to each gaol for drunkenness during the years 1885 to 1920, both inclusive. The figures for 1919 and 1920 are compared and the increase or decrease in each case is shown.

ONTARIO GOVERNMENT DISPENSARIES

Head Office, Toronto, January 19th, 1921.

Mr. J. D. Flavelle,
Chairman, Board of License Commissioners,
46 Richmond St. West, Toronto.

Dear Mr. Flavelle,—I am attaching herewith auditor's report and financial statement covering operations of the dispensaries from January 1st, 1920, to December 31st, 1920.

Public Service.

During the past twelve months the dispensaries have been in a complete state of organization and have, therefore, been able to take care of the public's requirements promptly, courteously, and correctly.

The mail orders from the different parts of the Province have been despatched practically always upon the date of receipt, and when I draw your attention to the fact that an average of 9,000 mail order shipments are made each month from the various dispensaries you will realize this is an accomplishment to be proud of. Ninety per cent. of these shipments are single bottles, which have to be unpacked and again repacked, wired and sealed for shipment.

During the past year the manufacturers of the Province found themselves overnight faced with an alcohol famine. Without warning, the responsibility of further supplies was thrust upon the dispensaries. Previous to this each manufacturer had been purchasing from the Canadian distiller and the dispensaries simply handled their own requirements. When the manufacturers turned to this organization, we immediately put forth our best efforts. The fact that up until the present time we have been able to supply all the alcohol required by the Province at satisfactory prices proves the efficiency of our buying organization.

Accounting.

Our intricate and comprehensive system has been maintained at a very high point of efficiency throughout the year. On daily sales averaging $10,000.00 the reports show day after day and week after week an absolute accounting of every cent of money paid to and every individual bottle of liquor sold by the dispensaries. Every bottle in and out is checked and when a sale is made the dispensary has to show first of all a prescription properly censored for the sale and the cash received. At this moment an accounting can be given of every individual bottle of liquor in all the dispensaries.

Staff.

The policy originally adopted of preference to returned men in the matter of vacancies has been most faithfully carried out, and practically every man taken on during the past year has been an ex-service man. The staff has maintained the high opinion I formed of it in 1919, which is all I require to say.

Due to the resignations of the general manager, comptroller and several branch managers, certain executive vacancies occurred during the year. These were filled, with one exception, from the ranks of the organization itself. Promotion amongst our own staff has been the policy, and as a result we have a staff whose willingness, co-operation and loyalty is all that can be desired.

PURCHASES.

During the past year we have been able to maintain our stocks in a satisfactory manner in spite of the many difficulties with foreign markets, all more or less unsettled and transportation facilities very bad. Our sales on imported goods seem to increase steadily, being principally brought about by the fact that domestic goods are, in some cases, equal in price to the imported article. At the moment our sales show practically 75% imported goods to 25% domestic as against an even break a year ago.

Sufficient contracts and accepted orders are placed to take care of the dispensaries for the greater part of the coming year, and, therefore, the difficulties experienced in the past year in this respect will not be felt during 1921.

FINANCIAL STATEMENT.

Sales—The most peculiar feature during the past year has been the fact that in spite of the opening up of the importation from other provinces at the beginning of the year the dispensary sales maintained their usual level, as a comparison of the seven months of 1919 with the same seven months of 1920 shows. Had a full year's sales in 1919 been available for comparison when importation was cut off, I am satisfied the year 1920 would show a substantial increase in sales over 1919, in spite of the importation from other provinces.

The explanation for this, as far as we can gather from the public, is the fact that the people are satisfied with the quality and prices of the dispensaries and prefer, when possible, securing their supplies from a government depot.

Gross Profits—We worked on the usual basis of 33⅓% gross. Our average gross on Canadian goods is 31%, while the statement shows an average of 40% on all sales. This is due to the reduced prices of foreign goods caused by fallen exchange, selling prices having been set at a fair average rate so that retail prices would not continually fluctuate and confuse the public.

Payments—As the statement shows, during the past year we have paid to the Provincial Treasurer the sum of $250,000.00 out of profits alone, any capital advances having been previously prepaid in 1919. We have now reached a point of having made practically all the capital required to run the entire business out of profits alone and should thus at an early date be able to commence paying out to the Provincial Treasurer the actual profits made each month.

Overhead—The actual overhead comes to 15.49%, inclusive of discounts to doctors and druggists amounting to 4.62%, and prepaid express charges on shipments all over the Province amounting to 2.11%. Eliminating the latter two, which are liabilities only a government owned and operated business would assume, our actual overhead comes to 8.76%, as against 9.03 last year, which is practically half the overhead of an ordinary retail business. Against this, in our favour, is the fact of a large turnover, but with no sales monopoly on account of importation.

Breakage—The average amount of breakage throughout the entire system amounts to .06%. The maximum amount allowed the stores for accidental breakages is .075%, and the actual breakage is well within the allowance. When I mention that No. 1 store handles an average of 8,000 bottles per week, and that their actual allowance is three bottles for accidental breakage, and that they usually have a breakage of one, will give you an idea of how carefully this matter is checked up and handled. The same efficiency exists to a similar degree throughout the other stores.

EFFICIENCY.

Head Office—Every department of Head Office has given the utmost satisfaction during the year. The work has been very heavy and has been handled with the utmost despatch, correctness and general efficiency. As absolutely every transaction passes through Head Office, and the turnover amounts to several millions, this will give an idea of the tremendous amount of work involved with a staff of only twenty-one.

Inspection Department—This department has done a tremendous amount of arduous detail work during the year. Its functions are the inspection of every prescription on a dispensary issued by every doctor in the Province, so that the censoring at the various dispensaries is checked up closely with a view to finding out whether forged prescriptions are being passed by any one of the retail branches. I am glad to say this condition, which was so prevalent a year ago, is practically a thing of the past.

This department also prepares files of every doctor's, druggist's, dentist's and veterinary surgeon's signature in the Province, and prepared a complete index of such signatures for every dispensary and the License Board. The dispensaries now have each a complete file of signatures on hand, and this is responsible for the elimination of the forgeries. At least 60,000 signature cards were prepared, filed and indexed by this department during the year.

Too much cannot be said in praise of the Inspection Department's work.

Central Warehouse—This department, located partly at Toronto and partly at Hamilton, has handled approximately 154,000 cases of liquor during the year, this being received and again shipped. It is also responsible for the accounting of each individual case and bottle just as retail dispensaries are. It is also responsible for the examination and repacking of confiscated stock, which also runs into many thousands of cases in addition.

This department has been admirably managed, and seems to be always ready to take care of any extra burden thrown upon it.

A new dispensary is now under way at Fort William, and will be opened early in February. Steps are being taken by Head Office to have this dispensary started right and maintained in the same way. The new dispensary will give service in this northern locality which has in the past suffered through its isolation. Formerly a person sending in an order had at least to wait four days before the shipment could reach him. With the opening of the new depot this will be eliminated, and service given in a locality which badly required it.

The above, I think, covers the ground pretty fully, and in closing would say that during my term as general manager, which ended November 1st, I have been most fortunate in my associations with the Board and the auditors. I would like to express my appreciation, particularly to the Chairman of the Board and Major Shiell, whose support and advice have been of inestimable value.

Respectfully yours,

ONTARIO GOVERNMENT DISPENSARIES,

W. B. CLELAND,
Vice-Chairman Advisory Board.

TORONTO, 19th January, 1921.

J. D. FLAVELLE, ESQ.,

Chairman, Board of License Commissioners of Ontario,

46 Richmond St. W., Toronto.

ONTARIO GOVERNMENT DISPENSARIES.

DEAR SIR,—We have audited the books and accounts of the dispensaries, Central Office and Central Warehouse for the year ending 31st December, 1920, and have prepared the enclosed balance sheet and schedules relative thereto which, subject to the following remarks, exhibit a true and correct view of the position of the undertaking on 31st December, 1920, and a correct statement of the earnings for the year.

We report in detail, as follows:

BALANCE SHEET.

ASSETS.

Dominion Bank, Toronto, $54,823.54.

This amount is in agreement with certificate from your bankers after allowing for outstanding cheques.

Dominion Bank, London, Eng. $2,490.05.
Anglo-American Bank, Paris, France, $1,161.55.

We have written for certificates verifying these balances but have not yet received replies.

Cash on hand, $2,200.00.

We counted the cash at the Central Office and Central Warehouse on 31st December, 1920, and your Head Office officials counted the cash on the same date at the dispensaries and certified that they were correct.

Stock of Liquors at Cost Price, $866,319.64.

Your General Manager has certified that the stock was taken under his direction and is priced at cost.

The inventories at the dispensaries were taken by the managers and one of the Central Office staff and at the Central Warehouse by the chief stock accountant and the warehouseman, and were checked with the stock ledgers kept at the Central Office and found to be in accordance therewith.

Attached hereto (Schedule 5), is a statement showing the stock on hand and furniture and fixtures at each dispensary and the amount of fire and other insurance carried.

The confiscated stock on hand at Toronto at 31st December, 1920, amounting to $96,450.12 is not included in the assets. The dispensaries handle this stock and keep the records on behalf of the Board of License Commissioners and purchase from the Board such stock as they require from time to time.

The following insurance is carried:

Fire, $114,000.00.
Riot, $74,000.00.

Accounts Receivable, $20,634.66.

We have carefully examined these accounts which consist of sales to hospitals and other institutions and manufacturers and in our opinion will be collected without any loss.

Claims and Duty Recoverable, $11,980.15.

In our opinion the reserve of $2,000.00 against these accounts is sufficient.

Liabilities.

Accounts Payable, $11,475.19.

Your general manager has certified that all known liabilities as at 31st December, 1920, were included in the books at that date.

The value of goods on order but not received at 31st December, 1920, amounted to $1,408,609.15, as per Schedule 6 attached and your general manager has certified that this total is correct and states that the amount covers contracts for the year 1921 in monthly deliveries.

Leases.

Schedule 7 gives a description of the various premises occupied by your dispensaries, Central Office and Central Warehouse.

Surplus, $946,634.40.

This is the balance of profits made since the dispensaries were opened on the 24th May, 1919, after paying $250,000.00 to the Provincial Treasurer and writing off the whole of the machinery, equipment and office furniture.

Details of the profit earned for the year ending 31st December, 1920, are shown in the attached Schedules 1, 2 and 3. We have to report on the principal items as follows:

Profit and Loss Account—Schedule 1.

This Schedule shows in detail the operations of the various dispensaries. The liquors are purchased through the Central Warehouse and are charged up to the various dispensaries at cost.

The gross profits resulting from sales amounted to	$1,380,920 35	41.06%
From this must be deducted the following:		
Discount on sales to chemists and doctors	$155,541 27	4.62%
Mail Order Shipping Expense	70,830 24	2.11%
Operating expenses, including Central Office and Central Warehouse Expense	294,531 77	8.76%
	$520,903 28	15.49%
Leaving a net profit on operations of	860,017 07	25.57%
	$1,380,920 35	

Your policy is to sell the liquors at the same price throughout the Province and to pay the expense of special packing and expess charges. We have shown on the same Schedule the comparative statements of the total business done by each dispensary.

The percentages of gross profits earned at each dispensary were:

No. 1, Toronto	41.23 per cent. of sales
No. 2, Toronto	40.45 " "
No. 3, Hamilton	41.97 " "
No. 4, London	41.38 " "
No. 5, Windsor	38.62 " "
No. 6, Kingston	41.04 " "
No. 7, Ottawa	41.01 " "

The differences are accounted for by the varying ratio of profits on the class of liquors sold, a larger profit being obtained on imported goods.

The sales in gallons of imported and Canadian whiskies for the period 16th to 31st December were:

	Canadian.	Imported.
No. 1, Toronto	1,576 gals.	3,294 gals.
No. 2, Toronto	241 "	1,114 "
No. 3, Hamilton	948 "	1,101 "
No. 4, London	789 "	787 "
No. 5, Windsor	503 "	294 "
No. 6, Kingston	387 "	378 "
No. 7, Ottawa	295 "	431 "

The low percentage at Windsor is accounted for by your management by the fact that the bulk of the sales there are for Canadian whiskies.

Last year the different dispensaries were charged with the actual discount allowed to chemists and doctors and the expenses of the mail order in each dispensary. This plan has been changed this year, all discounts and expenses of the mail order being included in one account which is spread in the same way as the expenses of the Central Warehouse and the office expenses, viz., in proportion to the sales at all the dispensaries. The operating expenses of some of the dispensaries show a very much higher percentage on the sales than others.

OPERATING EXPENSES—SCHEDULE NO. 2.

This Schedule shows details of the various expenses together with the percentage that these expenses bear to the sales. The largest item consists of salaries, etc., $186,519.39, being approximately 5½% on the total sales of $3,363,020.64. It must, however, be borne in mind that the bulk of the sales are made in single bottles and record has to be kept of every bottle at the Central Office. Another item of importance is the amount written off for breakages, $1,914.68, or .06% of the sales. Under the present system of cost records this is the only item of stock which cannot be checked and should be subject to the closest supervision by the management.

NET PROFIT AND LOSS ACCOUNT—SCHEDULE NO. 3.

This Schedule shows the net profit and loss earned for the period.

Yours faithfully,

CLARKSON, GORDON & DILWORTH.

Ontario Department of Agriculture

REPORT

OF THE

Minister of Agriculture

PROVINCE OF ONTARIO

FOR THE YEAR ENDING
OCTOBER 31, 1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

Printed by
THE RYERSON PRESS.

To His Honour LIONEL H. CLARKE,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the honor to submit the annual report of the Minister of Agriculture for the year ending October 31st, 1919.

As a change of Government took place on November 14th, 1919, it will be observed that the year's work was entirely under the administration of my predecessor.

In the following pages the various activities of the Department during the year are recorded.

All of which is respectfully submitted.

MANNING W. DOHERTY.

Minister of Agriculture.

TORONTO, 1920.

REPORT

OF THE

Minister of Agriculture

PROVINCE OF ONTARIO

1919

ONTARIO AGRICULTURAL COLLEGE

The first real after-the-war term began in September and the result was shown very strikingly in the attendance. Outstanding features were the record Freshman Class of approximately 270 and a total registration of almost 600 as compared to slightly less than 200 for the previous winter term.

The following are the figures in each course held throughout the year:—

(Figures for general courses include students of winter term and now students of fall term.)

General Course		615	
Specialists in General Course Work		16	
Manual Training (One Year Normal Course)		9	
Dairy Courses		97	
Stock and Seed Judging		80	
Poultry Raising		20	
Horticulture		74	
Apiculture		74	
Drainage and Drainage Surveying		11	
Farm Power		263	
Courses for Returned Soldiers		31	
			1,258
Domestic Science (at Macdonald Institute)			324
Summer Courses—High School Teacher—First Year	27		
Second Year	21		
		48	
Public School Teachers—First Year		171	
Second Year		166	
School for Rural Leadership		52	
Farm Mechanics		10	
Course for School Inspectors		86	
			533
Total			2,115

ANALYSIS OF COLLEGE ROLL (FALL TERM, GENERAL COURSE,) 1919

From Ontario.

Algoma	5	Lambton	10	Prince Edward	2
Brant	10	Lanark	13	Rainy River	1
Bruce	8	Leeds	10	Renfrew	4
Carleton	53	Lennox & Addington	4	Russell	2
Dufferin	2	Lincoln	17	Simcoe	14
Dundas	8	Middlesex	15	Stormont	1
Durham	3	Muskoka	7	Temiskaming	2
Elgin	11	Nipissing	3	Thunder Bay	2
Essex	12	Norfolk	5	Victoria	1
Frontenac	11	Northumberland	2	Waterloo	14
Glengarry	7	Ontario	14	Welland	8
Grey	6	Oxford	18	Wellington	43
Haldimand	7	Parry Sound	3	Wentworth	18
Halton	7	Peel	8	York	64
Hastings	9	Peterborough	6		
Huron	12	Perth	13		
Kent	5	Prescott	4	Total from Ontario	529

From Other Provinces of the Dominion.

Alberta	4	Nova Scotia	18	Saskatchewan	4
British Columbia	8	Quebec	4		
New Brunswick	2	Prince Edward Island	1	Total from other Provinces	41

From Other Countries.

Bermuda	1	Scotland	3	U.S.A.	6
England	2	South Africa	1	U.S. of Columbia	1
Japan	1	Switzerland	1		
				Total from other Countries	16

Age and Religious Denominations.

The limits of age in the General Course, 1919, ranged from 17 to 36 years. The average age was 21.

Religious denominations of students registered for the fall term were:

Anglican	104	Disciples of Church	4	Methodist	180
Baptist	39	Evangelical	2	No Religion	12
Brethren	3	Friends	4	Presbyterian	188
Christadelphian	1	Lutheran	5	Roman Catholic	17
Congregational	3	Mennonite	2	Unitarian	1

FIELD HUSBANDRY DEPARTMENT

For the information of those who advocate the frequent change of seed from one farm to another it is of interest to know that in connection with the variety tests at the College certain kinds of grains have been grown continuously and successfully without change of seed for periods covering from twenty-four to thirty years. These grains have been grown under normal farming conditions, no commercial fertilizers were used and no plant selection practised. The crops have been grown under a four years' rotation consisting of two grain crops, one cultivated crop and a pasture crop. The following gives the average results in yield of grain per acre per annum of each of eight varieties of oats grown without change of seed for the past thirty years and for the past five years respectively: Egyptian 76.4, 78.4; Bavarian 84.1, 90.7; Black Tartarian 70.1, 72.8; Joanette 83.3, 75.1; Siberian 89.4, 87.7; Oderbrucker 85.9, 87.1; Probsteier 86.4, 89.4;

and Waterloo 84.8, 84.8. It will be seen that in the average results here presented in only two instances was the yield for the last five years less than that for the whole thirty year period. Taking the average of all the varieties it was found that for the past thirty years the yield was 82.6 and for the last five years of the period 83.3 bushels per acre. For decided increases in grain production in Ontario other methods than the frequent and indiscriminate change of seed are necessary.

Extensive experiments at Guelph, each of which covered from five to nine years, prove that greater yields per acre come from the sowing of large, plump, sound, well-matured seed of high germination than from medium sized or smaller seed. While the selection of seed has a beneficial influence on crop production, this influence is temporary and it is the selection of plants that has far-reaching results. Many of the varieties which are now cultivated in different countries are the result of plant selection. The College at Guelph has introduced a number of varieties obtained through the nursery system of selection and now used more or less extensively in cultivation. Amongst these are: O. A. C. No. 61 spring rye; O. A. C. No. 21 barley; O. A. C. No. 72 and No. 3 oats; O. A. C. No. 81 and No. 111 soy beans; O. A. C. No. 71 millet; O. A. C. No. 114 flax and O. A. C. No. 2 strain Yellow Leviathan mangel.

By hybridization the improvement of the best varieties of farm crops already in existence can be further effected. Extensive work in cross-fertilization is carried on at the College. The O. A. C. No. 104 variety of winter wheat originated at the College from a cross between the Dawson's Golden Chaff and the Bulgarian varieties. The new hybrid wheat has surpassed both its parents in yield per acre in the average of the past six years. It has also given higher results than the varieties used in the co-operative experiments throughout Ontario in each of the three years in which it has been distributed.

The comparative results from different classes of farm crops are summarized in a new bulletin prepared by the Professor and Staff of the Department of Field Husbandry. It shows that of the different cereals grown under average conditions in the Province, barley stands at the head of the list of the small grains in weight of digestible constituents per acre. Oats occupy an intermediate position and buckwheat is at the bottom of the list.

Too many old timothy sods, which make poor pasture in hot dry summers, are responsible for the lightness of the pasture crop.

DEALING WITH T.B.

Tuberculous cattle have been removed from the College dairy herd, the Professor of Animal Husbandry reports. The isolation buildings, where these cattle were stabled, have been pulled down. Every six months the herd is tested. All the cows in the dairy barn are entered in the R. O. P. and while few have made exceptionally high records, the results have been fairly satisfactory on twice-a-day milking. Holsteins of good quality predominate and the herd also includes Ayrshires and Jerseys. The Ayrshires of the herd are now headed by a Junior Champion of the Canadian National Exhibition.

The herds of beef cattle maintained on the farm have done well. The Scotch Shorthorns have proved profitable and an effort is being made to increase this herd. Only two females were disposed of at the annual sale this year. One bull calf sold at the sale brought $740, a record price for a young Shorthorn bull. Besides the breeding herds a class of extra choice finished steers has been kept for the classroom.

STEER FEEDING EXPERIMENT

As reported last year, fifteen calves were purchased in August, 1918, and put in a feeding experiment intending to prove or disprove the value of good breeding in beef production. These cattle, consisting of three scrubs, three dairy steers, three pure-bred beef steers, three cross-bred steers and three grade Shorthorn steers are now in the stalls at the commencement of the finishing period. They will be sold in April, 1920, and all figures in connection with the work will then be available. These fifteen steers are proving valuable for class-room purposes and students interested in live stock are watching the results closely. Stock like this is necessary to illustrate the good and the inferior types and are more and more valuable as the student realizes the necessity of having a working knowledge of commercial live stock.

WORK WITH SHEEP

Shropshire and Leicesters are the breeds of sheep carried for breeding purposes. The lambs which came last year gave an increase of 140 per cent. in the flocks. A noticeable feature of the year's work was the effect of "flushing" the ewes just before the breeding season. The breeding ewes were allowed the run of a rape plot and at the same time had access to old pasture. They were gaining in flesh at the time of service and the percentage of twin and triplet lambs was large.

The wool was marked through the co-operative system and the average clip per ewe of all breeds was 8 lbs.

In the autumn of 1918 an experiment was carried on with 8 ram lambs, 8 ewe lambs and 8 wether lambs to ascertain their value when dressed for the meat market. The market discriminated against the ram lambs to the extent of at least $1.00 per hundredweight. The following conclusions from the experiment are interesting:—

1. The ram lambs lost a greater percentage in weight during shipment than either the wether or the ewe lambs.
2. The highest price was obtained for the ewes. The lowest price was obtained for the rams. The ewes brought more per pound than the wethers for the reason that they were about the proper weight, while the wethers were considerably too heavy.
3. The rams dressed out the poorest, as well as being the poorest sellers. They were coarse in neck and shoulder, and were lacking in finish in the more highly priced cuts.
4. Markets will pay a dividend for well finished lambs. On December 13th—the day the lambs were marketed—the market was dull, quotations for lambs being $14.40. Yet the rams, which were the poorest sellers of the lot, brought $14.25, while the wethers brought $15.25 and the ewes $15.50.
5. Markets discriminate between ram lambs and wethers, accepting rams only at a reduced price. The wonder is that a greater discrimination is not shown, and undoubtedly would be if it were not for the keen competition among the buyers.

SWINE

During the year some of the choicest of the young sows at the College were added to the breeding herds of Yorkshires and Berkshires and these two breeds are being carried along on a constructive breeding basis. To introduce new blood a prize-winning Yorkshire boar was imported from England and it is planned to increase the numbers of the two breeds mentioned. Two Tamworth sows have been added to the breeding herds and for the class-room two pens of Poland Chinas, one of Chester Whites and one of Durocq Jerseys are carried.

A new piggery is in course of construction. It is 127 feet long and 32 feet wide and when completed will increase the accommodation for pigs to such an extent that considerable progress should be possible.

ANNUAL SALE OF BREEDING STOCK

The annual auction sale of pure-bred live stock was held October 30th, 1919, and was considered by stockmen present a good success. Not so many cattle were offered as formerly and fewer pigs were sold than was the case the previous year but prices were high, particularly for Shorthorns and swine, and the sale went off briskly. Buyers were present in large numbers and the stock was widely distributed in the Province.

The following is a detailed statement of the sale:—

5 Shorthorn bull calves and two heifers brought	$2,995 00	average	$427 85
1 Hereford bull calf brought	....		340 00
4 Holstein bull calves brought	500 00	average	125 00
2 Ayrshire bull calves brought	110 00	average	55 00
14 Shropshire lambs and ewes brought	402 50	average	29 03
8 Leicester sheep and lambs brought	232 50	average	29 06
2 Cotswold ram lambs brought	40 00	average	20 00
13 Yorkshire sows (bred) brought	1,225 00	average	94 24
21 Young Yorkshire sows and one boar brought	1,097 50	average	49 88
6 Young Berkshire sows brought	270 00	average	45 00
1 Grade Hereford steer, 15c per lb.	....		145 50
1 Grade Shorthorn steer, 17c per lb.	....		221 00
1 Grade Shorthorn steer, 16½c per lb.	....		198 00

This made a grand total of $7,777.50.

This amount was considered exceedingly satisfactory and the popularity of this annual sale seems to be increasing. A large number of buyers at former sales were in attendance and made new purchases.

DAIRY EXPERIMENTS

Investigations with reference to buttermaking were conducted by the Dairy with important results. The chief lines of investigation were: pasteurizing sour cream at temperatures of 140°, 150°, 160°, 170° and 180°F. with and without culture; also with and without adding lime neutralizer before pasteurization. Samples of all lots were sent to the Government Grading Station at Toronto soon after making, where they were held until October 28th, when they were scored a second time. The chief results obtained were:—

1. The higher the temperature used for heating the sour cream the greater the loss of fat in the buttermilk, but this was lessened somewhat by reducing with lime the acidity to about .3 per cent. before heating.

2. The lots heated to 170°F. produced the best all-round butter, both when fresh and after being held in cold storage for two to six months.

3. Apparently there was no advantage in using eight per cent. culture (starter) as the averages of all scores for flavor were practically the same for the lots with and without culture, added for the purpose of ripening the cream.

4. There was little or no difference in the quality of the fresh butter whether lime neutralizer was added, or not, to the cream before pasteurizing, but when

held for some time in cold storage the neutralized lots were better in flavor and scored slightly higher in total points. These tests indicate that it may be advisable to reduce the acidity of very sour cream before pasteurizing, but it would seem as if the acidity should not be reduced below .3 per cent., otherwise curdling takes place when the cream is heated, causing excessive loss of fat in the buttermilk, and particles of curd in the butter which are very difficult to remove.

Tests were made on the effect of working butter more than usual. The results indicate that overworking butter seems to improve its keeping quality. Lots "underworked" lost two points in flavor when kept in cold storage for about three months, while lots of similar butter "overworked," lost but one point in flavor kept the same length of time and under similar conditions. The total points were also greater for the overworked lots both when fresh and when held. The evidence points to the advisability of erring on the side of "overworking," especially for butter which is to be placed in cold storage.

Whether or not a cow's milk tests higher at any particular period in the lactation as compared with some other period was a subject of investigation by the Dairy. Three cows, an Ayrshire, a Holstein and a Jersey, were tested for fat and solids not fat during the past summer. The results indicated that the variance in percentages was an individual characteristic rather than one of breed. This throws some light on the question of the reliability of short-time tests. Contrary to commonly accepted opinion, the solids not fat varied more than did the percentage of fat, and with all the cows of the three breeds the solids not fat were higher early in the stage of lactation than later.

Other experiments at the Dairy included: tests as to the relative values of rennet as against mixtures of rennet and pepsin for cheese manufacture which demonstrated that rennet, where it can be procured at reasonable cost, is to be preferred rather than pepsin preparations as a coagulating agent; tests as to the effect of the acidity of milk on rennet and pepsin solutions which proved that increasing the acidity of the milk did not improve the yield or quality of cheese in the pepsin lots as compared with rennet-made cheese; experiments in increasing the temperature of the milk from the accepted standard of 86°F. to 90°F. at the time of adding rennet and pepsin showed that the higher temperature of the milk gave an increased yield of cheese but the quality of the cheese was not quite so good by using 90°F. as compared with 86°F.

POULTRY CULLING DEMONSTRATION

By special vote for poultry extension work the Poultry Department was enabled to hold culling demonstrations in practically every county and teach poultry owners to know how to tell good producers from the poor layers or "boarders." Ninety-seven culling demonstrations were given at farm homes. At the demonstrations 5,947 hens were examined, of which 2,436 were considered as being cull hens or boarders. While more than 40 per cent. were poor layers, many were old hens who were productive when younger. They had outlived their usefulness as egg producers. While it was recognized to be impossible to cull all the flocks of the Province, it was felt to be possible to teach a few people in each locality how to cull and these in turn could teach their neighbors.

At most culling demonstrations killing and plucking demonstrations were also given. Many people kill and dress their poultry badly, thus reducing its market value.

The Poultry Department endeavors to supply pedigreed males from known good laying hens to the various breeding stations established in the Province for supplying eggs for hatching to the rural schools. This is not an easy task as there are more than 140 breeding stations of Barred Plymouth Rocks. These stations will require for next season's breeding over 450 males. An effort is being made to develop and maintain a strain of high laying Barred Plymouth Rocks. Some work has been done with other breeds, particularly White Leghorns. It requires a large number of birds to do this work.

Work of this nature necessitates a close study of the factors, other than breeding, which may influence the production of eggs. Among the chief of these are the dates of hatching, methods and kinds of feeding and feeds, the weather, and last, but by no means least, is the attendant. Poultry, to do well, require careful attention and where one is obliged to change men frequently, as has been the case during the past four years, the task has been difficult.

Below is given the results of the egg production from March, April and May hatched pullets for the years 1916, 1917, 1918 and 1919:

Barred Rocks.			Average.
1915-16	Group	1	164.7
	"	2	151.7
	"	3	130.2
1916-17	"	1	165.9
	"	2	168.6
	"	3	140.48
1917-18	"	1	143.9
	"	2	145.34
	"	3	150.13
1918-19	"	1	175.5
	"	2	166.6
	"	3	151.51

EXTRA LIGHT INCREASES EGG PRODUCTION

A series of experiments were conducted last year to ascertain to what extent hens would lay more eggs when the pens were lighted during the long nights of fall and winter. Electric lights were used in the pens until about 9 p.m. each night from September 21st to March 21st. The plan was to give the laying birds fourteen hours of light. A record was kept of the egg production by months of four groups of birds representing both pullets and yearling hens of two breeds. Following is a summary of the egg production per group and the average number of eggs per bird where lights were not used and where lights were used:—

	Total.	Average per bird.
50 April hatched White Leghorn pullets—on lights	6,905	138
" " " " no lights	7,884	157.7
30 Yearling White Leghorn hens—on lights	4,298	143
" " " no lights	3,299	109
50 May hatched Barred Rock pullets—on lights	8,021	160.4
" " " no lights	7,141	142.8
50 Yearling Barred Rock hens—on lights	3,824	76.4
" " " no lights	3,325	66.5

In every case but one the hens with lights showed the highest yields, but what is even more important a closer analysis shows that the production during the winter months when eggs are higher in price was much greater with lights than without lights. In all check pens where lights were not used the birds were the better producers during the season of the year when eggs were at the lowest price; the yearling White Leghorn hens and the Barred Rock pullets, on lights, produced more eggs for the year; the Leghorn pullets, on lights, moulted heavily during the spring and never afterward laid as many eggs as was expected; for the eight months the two pens of yearling Barred Rock hens the ones on lights did best.

It will be of interest also to note that a large number of eggs through the hatching season were incubated from the yearling White Leghorn hens. Those without lights hatched ten per cent. better on the average. It will also be of interest to many breeders to learn that eggs appear to hatch best at the time the birds are approaching their highest production, and in many cases the hatching power declines in sympathy with production.

A special effort has been put forth for the past year by the staff of the Department of Poultry to try to teach every student how to tell a laying hen from a non-layer, and also to estimate whether a hen is a poor or good layer.

FIGHTING INSECTS

Investigation of insects attacking vegetables was continued by the Entomology Department, attention being specially paid to Cabbage Maggot, Imported Cabbage Worm and Onion Thrip. More than 7,000 cabbage plants and 2,000 radishes were used in the experimental plots and all kinds of substances or methods likely to prove valuable were tested. But the majority of the plots were treated with corrosive sublimate, which had given such good results the year previous. Most of the experimental work was carried out at Burlington where it was found that the maggot was scarce so far as cabbages were concerned. But it was found that radishes were attacked to a considerable extent by the pest. Corrosive sublimate applied twice gave an average of approximately 90 per cent. of clean radishes. Rows treated with other substances or left untreated gave from 20 per cent. to 70 per cent. of clean radishes. The radishes treated with corrosive sublimate were found not only cleaner than any others but were also much more shapely and of better quality and larger size.

Successful control measures against the Imported Cabbage Worm were found to be applications of the following: (1) Keating's Insect Powder, 1 ounce to 2 gallons of water, sprayed directly into the heads of the plants; (2) Dalmatian powder, 1 ounce to 2 gallons of water applied as No. 1; (3) a dry mixture of Paris green to 1 gallon of middlings in the proportion of 1 ounce of Paris green to 1 gallon of middlings and applied by taking a small quantity of the mixture between the first two fingers and the thumb and by a circling movement of the hand scattering it where the caterpillars were feeding in the head. This latter method, however, is unsafe for use on cauliflower as the poisonous mixture remains in the head and endangers the vegetable as a food. The solutions of Keating's or Dalmatian powder described as No. 1 and 2 are recommended for this vegetable.

Investigations of insects attacking bush fruits included Imported Currant Worm, Imported Currant Borer and Blackberry Leaf Miner. It was found that the Currant Worm apparently could not live on black currant foliage and that it confined itself to red and white currants and to gooseberries. Better methods of control of these various insect pests are being studied.

Spraying experiments were conducted in order to ascertain the best means of retaining the foliage on currant bushes. Almost every year the leaves of these bushes fall before the end of August and this lowers the vitality of the bushes and lessens their yield the following season. Disease and very hot weather are the chief of several causes for this dropping. Tests of liquid sprays and dusts were made. Bordeaux mixture and lime sulphur were the only preparations which gave results and Bordeaux was much the better of the two.

PLANT DISEASES

New diseases of plants were investigated by the Botany Department. These diseases included Wilt of Egg Plant, Rust of Lettuce and Stem Rot of Tomatoes. Wilt of Egg Plant caused considerable loss to the vegetable growers of Essex, Kent, Lambton, Wentworth and Welland. It was found to be worst in fields on which the egg plants had been grown for a number of successive years. The symptoms are recognized by the affected plants becoming yellowish and sickly in appearance and in some cases the leaves wilt and die. Brown or discolored areas several inches in length appear on the stem near the ground. In wet weather the surface of the discolored area may become covered with a white mould. If affected stems are cut the vascular bundles are found to be discolored. The fungus which causes this disease lives over from year to year in the soil. In order to prevent a recurrence of the trouble vegetable growers are advised to burn the diseased plants and not to grow egg plants on the same soil again for three or four years.

Rust destroyed the foliage of lettuce in many gardens. It is suggested that rusted leaves be plucked and burned and that the plants be sprayed with Bordeaux mixture, 4-4-40 formula, or commercial lime sulphur, 1 gallon to 40 or 45 gallons of water.

Stem rot of tomatoes takes place only under very humid conditions and thorough ventilation of the forcing houses is recommended.

Growers of stone fruits who spray early and thoroughly suffer little from Peach Leaf Curl. Continued wet weather in spring can prevent early spraying and fall spraying is recommended.

Much research work was conducted by the Department which has added to our knowledge of treating plant disease. Co-operative experiments in weed eradication have established that (1) good cultivation of soil followed by rape sown in drills provides a means of eradicating both Perennial Sow Thistle and Twitch Grass; (2) rape is a more satisfactory crop to use in the destruction of Twitch Grass than buckwheat; (3) rape gives much better results in the eradication of Twitch Grass and Perennial Sow Thistle when sown in drill and cultivated than when sown broadcast; (4) deep thorough cultivation in fall and spring followed by a well cared for hoe crop will destroy Bladder Campion; (5) mustard may be prevented from seeding in oats, wheat and barley by spraying with a 20 per cent. solution of iron sulphate without any serious injury to the standing crop or to the fresh seedlings of clover.

BACTERIOLOGY

In addition to doing much work in making bacterial examinations of soils and examining and reporting upon various specimens from live stock suffering from disease the Bacteriology Department continued its investigations of the yeast and mold content of butter. The purpose of the work was to secure information with regard to: yeast and mold content of raw butter as compared with pasteurized cream butter; efficiency of creamery pasteurization and extent of recontamination of pasteurized cream butter as indicated by yeast and mold counts; relation of yeast and mold content of butter to flavor and keeping quality; comparison of yeast and mold counts of butter with findings of the Storch test. Particulars of this investigation will be given in bulletin form. Among the publications of this department during the year was a circular on "Home Pasteurizing of Milk, particularly for Infant Feeding."

FARM WATER SUPPLY

Among the numerous calls upon the Physics Department for practical assistance in the solution of problems relating to mechanical equipment and farm engineering are requests for surveys for water supply. More applications for these surveys have been received than can be dealt with promptly and this is largely due to the apparent refusal of the Mansfield water finder to give satisfactory indications where water is known to be present. Certain rock formations are believed to be responsible for this failure of the instrument and residents of areas where these formations occur have been unable so far to receive assistance in locating water supplies. More advantage might be taken of the streams and other running water at the disposal of the farmer as a source of power for the pumping of water. Under such conditions a hydraulic ram can be operated at little expense for pumping water to higher levels for household and domestic purposes and the Physics Department will be glad to advise in connection with any installations of this character.

Practical assistance is offered by this Department in dealing with problems connected with drainage, the operation of tractors, farm machinery, lighting systems, lightning protective devices and other such matters.

FARM MANAGEMENT LECTURES

A course of lectures in farm management was prepared by the Farm Management Department and these lectures are now being given at the College to the classes of all years. These lectures are based on the information secured during the farm business surveys conducted by the department. The results of these surveys have been published in bulletin form. Further surveys are being made, and as the findings and conclusions are arrived at they will be published.

The data supplied by the Farm Management Department to the Board of Commerce and the Ontario Milk Producers' Association during the autumn enabled those concerned to fix a price for milk for city supply.

A course in the Science of Education has been established by the Department of English to provide training in methods of teaching for students who wish to become Agricultural Representatives or for those who wish to take teaching positions in other schools and colleges. Students in the third and fourth years are permitted under certain conditions to take this course instead of French.

About seventy per cent. of the students at Macdonald Institute now take the two year course. The restoration of the former one year Normal Course in Domestic Science in co-operation with the Department of Education is still under consideration.

ONTARIO VETERINARY COLLEGE

For the College term ending April 30th last, there was a total of seventy students in attendance in all classes. For the College term beginning in October last, there were seventy-eight students entered.

For the new term the standard of admission was raised to two years in the High School. This resulted in keeping out a number of those who applied, but it should also result in a better trained veterinarian for which there is a strong demand.

Another important change was made during the year. Although the College has for many years been in affiliation with the University of Toronto, the main degree of V.S. has been conferred by the College itself. Under the new legislation all degrees will in future be conferred by the University and the main degree will be B.V.Sc. (Bachelor of Veterinary Science).

This is the only English-speaking Veterinary College in Canada and is well equipped to carry on the work. The staff has also been considerably strengthened.

PUBLICATIONS AND STATISTICS

The work of compiling agricultural statistics was carried on in co-operation with the Federal authorities. The results are published from time to time as completed.

The distribution of the Annual Reports has been continued and the following are the figures of the numbers printed for distribution:—

Minister's Report	25,000
The Ontario Agricultural College	20,000
The Experimental Union	25,000
Agricultural Societies and Field Crop Competitions	21,000
Horticultural Societies	21,500
Vegetable Growers' Association	5,000
Live Stock Branch	25,000
Stallion Enrolment Board	7,000
Women's Institutes	40,000
Dairymen's Associations	20,000
Entomological Society	3,500
Fruit Growers' Association	4,000
Beekeepers' Association	4,000
Agricultural Statistics	7,500
Vineland Horticultural Experiment Station	5,000
Corn Growers' Association	6,000
Total	239,500

The following crop bulletins have been printed for distribution:—

137	November, 1918	9,000
138	April, 1919	4,000
139	May, 1919	5,000
140	August, 1919	6,000

Other bulletins printed and distributed were:—

*210	Strawberries and Raspberries	4,000
*218	Birds of Ontario in relation to Agriculture	15,000
*220	Lightning Rods	10,000
*223	Fertilizers	12,000
*247	Farm Poultry	12,000
*252	Preservation of Food: Home Canning	25,000
*262	Sugar Beets	25,000
268	Farm Crops; Experiments at O.A.C.	60,000
269	Hay and Pasture Crops, Grasses, Clovers, etc.	60,000
270	Judging Vegetables	12,000
271	The Apple Maggot	25,000
272	Contagious Abortion in Cattle	25,000
273	Community Halls	12,000
		297,000

*New editions.

Circulars were printed for special distribution as follows:—

16	Home Pasteurizing of Milk	25,000
17	W. I. Leaflet: Summer Meetings	5,000
18	Women's Institute Leaflet—Commencement	6,000
23	Northern Grown Certified Seed Potatoes	25,000
24	W. I. Leaflet: Programme of Convention	5,000
		66,000

AGRICULTURAL SOCIETIES' BRANCH

Under this Branch is carried on the supervision of the grants paid to the Agricultural Societies in the Province and the appointment of expert judges for field crop competitions and for fall fairs. The Branch also looks after the grants to Horticultural Societies and Vegetable Growers' and Plowmans' Associations. The work has been carried on during the past year along the usual lines. The grant to Agricultural Societies was increased at the last Session by $10,000 to a total of $85,000. A special feature of the work during the past year was the appointment of a lady fall fair specialist on a part time basis. Her efforts were directed to revising the Prize Lists covering ladies' work and fine arts at the fall fairs and to assisting directors and strengthening this department. The fine weather prevailing during the fall fair season is indicated by the fact that only about one-quarter of the $10,000 vote for wet weather insurance was paid and that only two societies reported losses reaching a maximum of $300. A smaller number of societies held field crop competitions owing to the very unfavorable weather which prevailed during the spring. There are approximately 350 Agricultural Societies in the Province holding annual exhibitions.

In regard to Horticultural Societies, there are now 100 local branches with a total membership of 20,000. The Provincial grant is $17,000.

Under the direction of the Plowmen's Association, which receives a grant of $1,000 per annum and which disposes of a portion of this among the local Plowmen's Associations, a large International Plowing Match, Tractor and Farm Machinery Demonstration was held at Chatham in October and attracted upwards of 40,000 people.

LIVE STOCK BRANCH

For the past three years this Branch has been co-operating with the Ontario Sheep Breeders' Association in the assembling and selling of the wool of the members of the Association throughout the Province. The wool has been assembled at the Winter Fair Building at Guelph and graded by the officials of the Dominion Live Stock Branch and then sold in bulk, the selling being done the past year by the Canadian Co-operative Wool Growers, Limited. The amount of wool handled in 1917 was 255,446 lbs., in 1918, 668,076 lbs., and in 1919, 704,169 lbs. While the amount handled during the past year did not exceed the amount to any extent of the previous year, it was noted that the quality was considerably higher.

The Winter Fairs held at Guelph and Ottawa are under the general supervision of this Department, working in co-operation with the Boards of live stock men elected by the Associations which carry on these exhibitions. The Fair at Guelph in December, 1918, was regarded as the best in the history of this exhibition from the standpoint of the number and quality of exhibits. Owing to adverse weather and the prevailing influenza epidemic, however, the attendance was considerably reduced and the management faced a deficit which was met by an increased grant from the Department.

The Ontario Stallion Enrolment Board, which also operates under this Branch, last season enrolled 1,729 stallions. As the Act prohibiting the travelling of grade stallions went into effect in the fall of 1918, there were all pure-bred, and showed an increase of 194 over the number of pure-breds enrolled in 1918. In addition there were approximately twenty-five interim certificates issued owing to transfer of ownership not being recorded. As far as the reports received by the Department go, it would appear that the elimination of the grade sire has been brought about without any serious dislocation in the horse industry in the Province.

Assistance was granted to sixty local Poultry Associations, each of which received a grant of $50 from the Department, and eight Horse Shows also received assistance in the form of grants of varying amounts.

The co-operative shipment of live stock to the West was again looked after and a total of 336 head of stock from small shippers was assembled in Toronto and sent out West in carload lots. Pure-bred Co-operative Sales were also encouraged and about twenty-five of these Associations made claim to the grant allowed in this connection, the grant being paid on the basis of $3 per head of stock entered at the Sale, maximum grant not to exceed $150 in any one case.

Twenty-two demonstration flocks of sheep have been placed in different sections of the Province with young farmers, each flock consisting of five ewes. The handling of these flocks is supervised by this Branch with a view to getting information to demonstrate the value of sheep raising. The flock owners agree to return to the Branch within four years six, one or two shear ewes in payment for the flock given.

INSTITUTES BRANCH

The activities of the Institutes and Dairy Branches covered a wide range of activities. Applications were received for speakers to Farmers' Institute and Board of Agriculture meetings. Men speakers were sent to all these meetings and women to about half. Altogether there were 228 meetings planned for, but only 149 held, as a result of the influenza epidemic. Co-operating with the Agricultural Representatives special speakers were furnished for a number of special meetings. Instructors were also sent to thirty-nine Farm Power Courses, and forty-seven Short Courses in Stock Judging. The number of meetings of all kinds held during the year was considerably reduced on account of the epidemic.

WOMEN'S INSTITUTES

The general direction and supervision of the work carried on by the 925 Branch Women's Institutes with over 30,000 members entails a great amount of work of a routine character.

Speakers were furnished for 728 meetings during the summer series. Instructors were provided for eighty-four Demonstration-Lecture Courses of two weeks each as indicated below:—

Home Nursing and First Aid	22	1,397
Domestic Science	23	1,414
Sewing	39	373
Total	84	3,384

Lady speakers were also furnished for some special meetings, and new organizations were established at twenty-five points.

Some of the workers (doctors and nurses) spent a portion of their time in the Medical Inspection of Schools and follow-up work. During the year, this feature of work was taken over by the Department of Education. The Women's Institutes, however, are co-operating with the Department of Education in making the work of added value. The number of pupils examined during the year was 7,192, and 369 pupils were operated upon at clinics planned for through the co-operation of the Women's Institutes.

A special three day Conference for lady speakers was held in April, when the lecturers considered many features of general interest to the Institutes. In addition to what may be termed "regular" Institute work, the following lines of work were given consideration at the Conference:—

"The Returned Soldier and Reconstruction."
"Rural Hygiene."
"Education of Girls."
"Ideal Features of a Modern Rural School."
"Laws Relating to Women and Children."
"Community Halls."
"Travelling Libraries."
"Medical School Inspection and Follow-Up Work with Clinics."
"Physical Development."
"The Consolidated School Problem as Related to Ontario."
"Home and School Club Work."
"Mother's Pensions."
"The Housing Problem."
"Social Hygiene."
"The School as a Community Centre."

Methods of organizing and carrying on the work were also discussed.

Women's Institute Conventions were held as follows:—

A Provincial Convention in early February, 1919. This was postponed from the previous fall on account of the epidemic.

Women's Institute Conventions were held at Ottawa and London in the latter part of October, 1919, the regular Provincial Convention being held in early November, 1919. The attendance and interest at all these Conventions were most gratifying and has resulted in a keener interest and more definite and helpful planning on the part of the Institutes.

A couple of Canning Centres, established for War-time activities, were operated along Community lines.

In connection with the work of all Branch Institutes, forms are furnished upon which to keep records and make returns. Financial statements and other returns are received from the 925 Women's Institutes.

DAIRY WORK

Instruction in all the factories and creameries throughout the Province is directed through this Branch. There is a staff of thirty-one instructors, three of whom are permanent and the others employed from the beginning of April to the end of November. Forms upon which to report and literature to be distributed by the instructors is provided from this office. The details of the field work is looked after through the two chief instructors for Eastern and Western Ontario.

The granting of certificates of qualification to makers and the issuing of certificates of registration to cheese factories and creameries has placed the industry upon a more solid basis.

Special speakers were provided for over 300 factory meetings. This Branch co-operated with the Dairymen's Association of Eastern Ontario in planning for the holding of seventeen District Dairy meetings and also co-operate in the holding of their Conventions.

The work of butter-grading has progressed quite satisfactorily, the accommodation at the Municipal Abbatoir proving quite suitable. Thirty-six creameries sent butter to be graded, an increase of six over the previous year. A larger percentage of the butter, however, proved to be second grade and considerable more work along these lines requires to be done to put the butter business on a proper basis. Aside from the regular grading, the butter grader was called upon to act as referee in 126 instances and this also necessarily had a considerable educational value.

FRUIT BRANCH

As a means of carrying on educational work in orcharding the Department has five orchards under lease. The following gives the location of the orchards, size and yield last season:—

	Trees.	Boxes.
Wellington, Prince Edward County	250	1,100
Whitby, Ontario	300	700
Collingwood, Simcoe	300	600
Simcoe, Norfolk	330	3,000
Thedford, Lambton	230	600

The returns have been very satisfactory and the handling of the orchards by the Department has made available much useful information. In addition to conducting these orchards, many individual orchards have been visited by the experts of the Department, who have given demonstrations in pruning, spraying and packing.

Nursery inspection and orchard inspection are looked after by this Branch. During the past year three permanent inspectors and five part time men inspected all stock in nurseries for San José Scale and other pests. The stock is now reported as being very clean as a result of the continuous inspection and supervised spraying. In the matter of orchard inspection, inspectors are appointed by local municipalities under The Fruit Pests Act. Their work is supervised by an official of this Branch and the municipalities are reimbursed to the extent of half the outlay. During the past year sixteen municipalities took advantage of this provision and appointed nineteen inspectors for San José Scale, Little Peach and Yellows. The two latter diseases of peach trees have been practically cleaned up where inspectors have been at work, but are reported as increasing in two townships which have not appointed inspectors.

VINELAND FRUIT STATION

The Equipment of the Vineland Fruit Experimental Station has been further augmented by the completion of additional greenhouse accommodation. The leased land has also been worked into shape, and the Station is now carrying out a considerable programme of plant breeding.

Among the leading plant breeding projects are the following: peach and strawberry breeding work, greenhouse cucumber breeding, apple pruning experiment, tomato variety test, investigations with bottled sweet cider, strawberries for jam and canning.

Full details of all these experiments will be found in the Vineland report.

In connection with the general potato improvement work some experiments were carried on to try out the relative value of northern and southern seeds. In Irish Cobblers the yields from northern seed exceeded yields from southern Ontario by five bushels per acre, while in Green Mountain the difference in favor of northern seed was 50 or 60 bushels to the acre.

Investigational work in the canning of fruit by-products was begun a few years ago, but during the war the plant was utilized to turn out canned fruits in commercial quantities for shipment to Ontario's soldiers overseas. With the cessation of this need the plant was reorganized on an investigation basis during the past year and experiments were carried on in the canning and preserving of many different lines. Among the experiments on which interesting results were obtained, were the following:—

Variety test of Peaches for Canning.
French Crab-apples for Cider.
Sweet Cider Bottled.
Grape Juice Canned.
Time required for Processing Canned Asparagus.
Variety test of Peas for Canning.
Variety test of Strawberries for Canning and for Jam.
Tomato Variety test for Canning.
Asparagus Soup Stock from Waste Asparagus.

NORTHERN ONTARIO PLANT BREEDING STATION

This station is carrying on work in the testing of hardy fruits, shrubs and vegetables suitable for Northern Ontario conditions and considerable work was done during the past year. Hardy seeds and shrubs were planted out and co-operative experiments were carried on in potatoes and other vegetables. In addition to the work on the farm, considerable attention was devoted to the district. Many hundreds of hardy perennial flower plants and many varieties of home grown vegetable seeds were distributed as well as fruit trees and fruit bushes. Special attention was given to supplying returned soldiers who took up land in the district with hardy fruit trees and bush fruit plants. Some landscape gardening work was done for the local municipalities making application and a great deal of educational work was done by public speeches, newspaper articles and other means, along the lines which the organization is intended to serve.

APICULTURAL WORK

During the past year much evidence has been brought to the attention of this Department regarding the spread of both American foul brood, Bacillus larvae, and European foul brood, Bacillus pluton, throughout the Province.

In 1907 European foul brood was found in Northumberland County and so far as evidence shows this was the only outbreak at that time. We have now positive evidence to show that European foul brood is present in twenty-two counties and will undoubtedly spread to other counties. With our present information there is only one remedy for the control of this disease, that is, the introduction of a young Italian queen from a resistent strain into a colony made strong and supplied with an abundance of stores.

The demand for Italian queens has far exceeded the supply so that for the past two years many beekeepers have been unable to secure queens. This has made it impossible for the apiaries to re-queen ahead of the European foul brood and so escape its bad effects. Where black or hybrid bees are kept the disease becomes epidemic in the apiary and vicinity and the loss of colonies is often one hundred per cent. in one year.

The spread of American foul brood has been largely due to the moving and selling of disease infected colonies, also due to robbing or transferring of infected material from colony to colony and apiary to apiary. At the present time there is no clause in the Foul Brood Act which will prevent the movement of colonies of bees or used apiary supplies without a certificate, and as many beekeepers do not recognize the disease, the danger is often unknown and disease carried into localities where it did not previously exist.

During the season of 1919, thirty-nine apiary demonstrations were held, 727 apiaries have been inspected and 297 apiaries found diseased.

AGRICULTURAL REPRESENTATIVES

The work of the Agricultural Representative is closely linked up with that of practically every Agricultural organization in the rural community. As the farmers become more familiar with the work of the Agricultural Representatives, they take advantage of the Representatives in solving their problems and improving conditions.

With the exception of three or four of the larger counties, Representatives have had no regular assistants, but have been working single handed. During the periods covered by School Fairs in the fall and Short Courses in Agriculture in the winter, however, an assistant was secured for each of two counties, which did much to relieve the Representative of heavy responsibilities and a congestion of work at these periods.

One more request for a Representative was received and that was from the United Counties of Prescott and Russell. The appointment, however, was deferred until the latter part of the year in order that a suitable man could be secured. This office was established at Plantaganet, which now makes a total of forty-eight offices, one in every county but one, and one in every district of the Province. Changes in the personnel of the Representatives occur from time to time. Positions were retained for men who enlisted for overseas service and a number have now resumed their former activities as Agricultural Representatives of the Department.

Some idea of the extent of the correspondence and office work and how the Representatives are used by the farmers may be gotten from the following summarized and tabulated statement:—

County	No. of Letters Received	No. of Letters Written	No. of Circular Letters Mailed	No. of Incoming Phone Calls	No. of Visitors at Office	No. of Meetings Held in Office	No. of Bulletins and Reports Distributed	No. of Miles travelled by Automobile
Algoma	1,403	2,050	2,878	1,751	822	12	300	7,750
Brant	1,066	985	1,098	667	893	14	....	10,000
Bruce	2,500	3,217	4,519	3,000	1,300	15	250	13,000
Carleton	725	850	4,750	1,400	700	40	1,100	9,284
Dufferin	4,500	4,000	6,000	2,000	4,000	30	600	8,000
Dundas	1,025	975	4,662	....	....	....	....	....
Durham	2,344	2,481	2,358	1,376	1,360	156	108	15,000
Elgin	2,200	2,450	3,800	2,550	1,825	25	400	10,386
Essex	1,280	1,500	5,000	1,500	1,500	28	400	9,000
Frontenac	2,169	1,270	8,840	850	2,100	68	500	7,450
Glengarry	1,600	2,000	4,500	306	2,100	46	....	5,175
Grenville	2,000	2,000	2,500	1,800	1,200	12	400	7,000
Grey	1,788	1,207	3,133	400	553	42	500	11,000
Haldimand	1,360	711	1,324	1,770	1,400	28	160	6,650
Halton	1,890	....	....	1,563	508	....	....	....
Hastings	955	695	1,747	340	1,484	57	175	10,890
Huron	1,075	685	1,335	300	1,000	38	400	10,000
Kenora	1,998	2,008	2,002	....	339	8	500	4,500
Kent	1,000	1,000	1,500	2,000	2,500	20	1,500	8,000
Lambton	1,405	1,283	4,193	885	1,084	95	150	15,000
Lanark	2,910	1,665	2,500	850	1,100	120	....	12,000
Leeds	4,000	3,500	2,000	5,000	2,000	40	1,000	5,000
Lennox and Addington	1,700	920	1,300	1,409	2,190	44	520	12,240
Lincoln	1,886	3,129	4,388	2,407	2,110	75	540	12,000
Manitoulin	786	874	....	1,490	4,055	12	100	9,950
Middlesex	2,432	1,749	2,508	193	....	26	904	17,604
Muskoka and Parry Soound	1,700	1,850	5,500	....	1,100	....	....	4,500
Norfolk	2,681	2,200	3,529	1,452	1,663	71	....	7,415
Northumberland	....	676	883	....	....	....	....	....
Ontario	1,000	875	5,000	250	1,100	26	600	14,542
Oxford	1,652	1,633	1,679	420	2,259	40	48	9,450
Peel	1,800	2,500	4,500	4,500	3,000	15	4,300	10,000
Peterborough	960	924	3,500	536	335	79	145	7,530
Prince Edward	1,268	1,192	1,850	3,500	2,035	40	2,000	7,000
Rainy River	1,134	994	1,417	2,074	1,871	....	307	7,000
Renfrew	1,238	1,352	1,843	893	984	16	935	5,138
Simcoe	2,000	3,000	2,000	....	2,000	35	....	16,000
Sudbury	1,339	771	9,795	910	919	11	404	7,750
Fort William	667	526	306	1,672	947	10	419	6,325
Port Arthur	773	637	400	1,056	1,640	11	1,450	4,950
Victoria	577	1,160	1,600	....	....	40	....	6,176
Waterloo	1,796	1,228	6,140	....	1,440	....	400	....
Welland	2,650	1,479	2,112	2,000	3,180	....	600	12,080
Wellington	1,013	1,113	3,424	640	1,475	37	1,117	7,000
Wentworth	....	1,253	7,317	....	7,994	85	3,750	....
York	3,200	3,500	13,500	1,200	2,400	35	400	11,000
Total	75,445	72,067	155,130	55,910	74,465	1,602	27,382	380,735
Average	1,715	1,602	3,525	1,472	1,773	41	761	9,286

WIDE RANGE OF PROBLEMS

Following up these figures the Representative for Prince Edward County states under "Comments on Office Work":—

"The following questions taken at random from the office records indicate the great variety and extent of the inquiries made: Harvesting beans; obtaining tile; raising and selling sheep; apple growing; transfer of live stock records; seed grain for testing; diseases of poultry; horses and cattle; wool shipping; tractor plowing; management and care of bees; spraying; insects affecting vegetables; treatment of grain; preparation of grafting wax; milk testing; identification of weeds and insects; growing sweet clover; planning gardens; stallion enrolment; diseases of fruit trees; farm help; samples of grain offered for sale; construction of septic tank; permanent pasture mixture; poison ivy; flax growing; garden fertilizers; planting potatoes; spraying gooseberries; cost of plowing; destroying burdocks; market for pure bred sheep; ditching machines; sowing speltz; rearing ducks; tuberculosis in stock; price of apples; purchasing farms; inoculating alfalfa; cattle vaccine; potato scab; use of stumping powder; rolling wheat fields; combatting lice on cattle; grading potatoes; obtaining nursery stock; planning poultry house; selling beeswax; mounting weeds; testing eggs; Drainage Law; care of roses and strawberries; composition of milk; potato fertilizers; Field Crop Competition; working farm on shares; value of fertilizers; frozen oats; preparation of starters; Grimm and Ontario Variegated Alfalfa; treatment of grain for smut; wool twine and boxes; spray calendars; cheese factory equipment; home garden plans; marketing seed grain; suitability of farm for orchards; measuring hay in stack; compiling creamery rations; making out registration papers and transfers for live stock; foul seeds in silage; spark plugs for tractor; feeding value of screenings; short course; insurance; feeds and feeding; self-feeder for hogs; seed corn; arranging stock sale; purchasing tractor; trap nests for hens; renting farm; packing wool; hog markets; farm lighting plants; seed potatoes; shipping oats; organization of cheese factory; setting hens; organization of Farmers' Club; use of lime and gypsum; management of bees; seeding roots; conducting baby clinic; soldier settlement; dairy herd tests; cream and milk tests; testing clover seed for vitality; feeding value of hominy; organization of Breeders' Clubs; making butter; varieties of potatoes; sulphur and lime; organization of canning company."

The above gives some idea of the nature of questions asked and while Representatives are not walking encyclopaedias, they obtain the necessary information elsewhere, if unable to answer such questions from their own experience.

Notwithstanding the varied activities of a general and distinctive nature, work with individual farmers is increasing from year to year. The York County Representative states that over one hundred visits or calls were made to look into the following problems:—

	Calls.		Calls.
Fertilizers	6	Alsike Clover	2
Sweet Clover Growing	5	Alfalfa	4
Farm Animal Disease	6	Milking Machines	5
Farm Buildings	7	Farm Dairy Problems	18
Poultry Disease	8	Potato Growing	5
Insect and Plant Diseases	15	Orchard Problems	8
Inspecting farms for purchase	16	Agricultural Organizations	10

These are merely representative problems and questions raised by the farmers and upon which they seek information.

SCHOOL FAIRS

During the past year the Department through its Agricultural Representatives distributed to 78,946 pupils in 3,278 rural schools of the Province the following quantities of seeds:—

Potatoes	1,890	bushels
Grain—Oats, barley, wheat, peas and corn	432	"
Roots—Mangels, turnips	12,575	packages
Vegetables—Beets carrots, onions, parsnips	30,700	"
Flowers—Asters, phlox, sweet peas, cosmos	21,900	"

The potatoes were distributed in 5 lb. packages; the grains in 1 lb. packages with the exception of corn, when about 2 ozs. were given out; the roots and vegetables were done up in packages sufficient to plant a plot 10 ft. by 18 ft. in size. These seeds were to be planted in small plots on the home place according to instructions which accompanied each package. Some idea can be gotten as to the size and arrangement of the plots from the instructions issued in regard to potatoes:—

INSTRUCTIONS

1. Measure a plot 120 x 210 inches. Drive stakes at the four corners and place a cord tightly around the outside of the stakes.

2. Mark out four rows 30 inches apart and make furrows with a hoe about 4 inches deep for each row, allowing 15 inches between the outside rows and the cord.

3. Cut the potatoes into 56 sets, with one or more strong eyes in each piece.

4. Plant 14 sets in each row, leaving the sets 15 inches apart in the row, and planting the end pieces 7½ inches from the cord.

5. Cover the sets with a hoe to a depth of about 4 inches.

6. Gather the beetles in a pail or kill them on the vines by spraying with Paris Green or Arsenate of Lead.

7. If possible spray the vines with Bordeaux Mixture to prevent blight and rot, using the proportion of 1 lb. blue stone, 1 lb. fresh lime and 10 gals. of water. By first applying this mixture when the vines are 6 or 8 inches high, and then repeating the process every two weeks until about September 1st, the blight will be prevented largely. One-quarter pound Paris Green may be added to the 10 gallons of Bordeaux Mixture, and the two remedies would thus be applied together.

8. Keep the soil loose at all times in order to destroy weeds and to conserve soil moisture. Gradually take up a little earth around the plants to prevent sunburn of the potatoes.

9. Dig the crop when ripe and separate the marketable from the unmarketable potatoes, finding the weight of each.

10. Save the choice potatoes for seed another year, and select a peck of the best for the Fair, these being clean and smooth and all of uniform size and shape. The large, rough potatoes seldom win a prize.

In following these instructions the public work out practical exercises in farm arithmetic. It teaches them to be careful and exact. It is true that some pupils disregard the regulations and some of the seeds are planted in long rows in the field beside the main crop belonging to "Dad." They then receive the same treatment as to cultivation and care as "dad" gives his crop, and the boy or girl loses a certain amount of interest in not caring for it himself. The identity is gone. This has been more noticeable where the plots have not been inspected and scored for "the best kept plot." Invariably, however, the most interested pupil is found where the plot is located in the garden or some place where it is carefully protected by a fence and where the instructions have been carried out to the very letter.

All told, 11,045 dozens of eggs of a bred-to-lay strain of Barred Plymouth Rocks were distributed last spring. This would be an average of approximately four settings to each of the 3,278 schools in the School Fair movement.

Reports which have come to hand would indicate that the fairs have not lost any of their old time enthusiasm.

EDUCATION CHIEF FEATURE

Where possible, arrangements were made to secure the services of outside judges with the exception of lady judges for the girls' sewing and baking classes.

Even in this, excellent satisfaction was given as the majority of fairs have the blind system of entry tickets and the pupils are known by numbers. After the judging is finished, the envelopes are torn open and the names of the prize winners are revealed. The Department supplies entry tickets, prize stickers, prize ribbons and officers' badges but all prize money is contributed locally through the Trustee Boards of the various school sections, township councils, and by public spirited persons. The prizes are not large, and purposely so. The outstanding feature is education; not the amount of prize money. Prizes are simply the means, while the end is in the interest that is aroused and the thought that is stimulated.

In live stock, special classes are open for colts of the heavy draft type, colts of the roadster or carriage type and a special class for the best trained or halter broken colt. The latter prize is for the boy's skill in handling a colt though the quality and conformation of the animal counts a small percentage. Instances are known where boys spend practically all their spare time in training their colts and their calves as well, to lead, back, lift their feet and do various stunts. The best colt in the draft and roadster classes may, therefore, not necessarily win the prize for the best halter broken colt. The idea behind this is to develop the boy's character and to interest the boy in the care and feeding of live stock.

Prizes are also given for the best beef heifer calf, pure bred or grade, and for the best dairy heifer calf, pure bred or grade. Where the class is not restricted to heifer calves, a clause is usually inserted which bars grade bull calves.

Spring lambs are usually classified as long wool and short wool breeds and the class for pigs is invariably restricted to a pair of bacon hogs.

In addition to these classes the Canadian Bankers' Association offer special prizes, with certain restrictions, for calves and pigs.

Poultry are brought to the fair in any kind of box or coop and exhibited in special collapsible steel poultry coops provided by the Department. Prizes are given for the best cockerel, best pullet and best trio—cockerel and two pullets—provision being made on the prize list for this rule " separate birds are required for each entry." This calls for a greater display of birds and gives more pupils an opportunity of winning a prize. The judging is done from a utility standpoint, the prize being given to the pupils whose birds show the best growth and development. With the exception of chickens hatched late in the season most of the birds were well grown and of good quality.

SOIL PRODUCTS

In regard to soil products, while the exhibits were numerous the quality in some instances was not of the best. This was not altogether the fault of the exhibitor but for some crops it can be attributed to the poor season. Some of the pupils are getting the type of potatoes and vegetables firmly fixed in their minds—profiting from past experiences—but others seem to have an idea, that the largest carrot and beet should win the prize. All vegetables are judged more from the housewife's standpoint, quality, uniformity and freedom from disease. Pupils would do well to consult their mothers when selecting their vegetables for exhibition.

The potato classes are confined to the Green Mountain and Irish Cobbler types. In the grain sections some splendid sheaves of oats, barley and wheat were shown. The cleaned grain from the plots was usually sown in quart jars and was of A1 quality. A great many farmers will get a start in good seed of the best varieties by buying the product of the "boy's farm." In the fruit districts of the Province, the apple sections of the prize list were well filled and the quality was good. The displays at some fairs would put to shame the exhibits of fruit at the larger so-called "fall fairs." The flowers are a decorative feature and some exceedingly choice bouquets of asters, sweet peas, phlox, and mixed bouquets from the home garden were exhibited. This feature is confined to the girls and they have become quite adept in arranging attractive bouquets.

WEED COLLECTIONS

The nature collections of weeds, wild flowers, insects—beneficial and injurious—weed seeds and the work of plant diseases and insects have not in the past been as numerous as we would like to see, though on the whole, the pupils deserve to be complimated, for the excellent collections form the basis for some splendid lessons in nature study and agriculture in the school. While it is desirable to know how to mount a specimen neatly and in the proper manner it is infinitely more desirable that the pupil know the name and character of the specimen whether it be a weed, weed seed or insect and know whether it is injurious and how best it can be combatted.

MANUAL TRAINING

Some interesting and excellent specimens were exhibited in the manual training classes, such for instance, as milk stools, chicken coops, bird houses, hammer handles, feeding hoppers, nail boxes, models of hay racks and ladders and specimens of work with jackknives. The boys take great interest in such work which they can do with saw, hammer and nails and pride themselves in their own handicraft.

Special classes have been provided for the girls under the term "Household Science." These include baking, canning, sewing, etc. Pupils competing in these classes had to attach a certificate to the entry tag stating that the work was done by the pupil. This certificate very largely overcame criticisms formerly made.

Writing, drawing, essays, maps and plans of home farms, all had their place at the fairs. At one fair an agricultural examination for boys and girls in or above the junior third class was introduced. Questions were prepared and sent to the schools before the summer holidays.

Along with the examination questions a number of bulletins were sent to each school to be kept in the library and to be used as a reference in looking up answers to questions submitted. The examination was held at each school prior to the Fair under the supervision of the teacher and the papers were marked by the judge. Reports would indicate that it is an excellent way of giving the pupils an opportunity of getting definite information on certain agricultural subjects.

SPECIAL CONTESTS AND FEATURES

Contests, in which the boys and girls enter keenly, are always an important feature on school fair day. The school parade is very attractive and inspiring. Some of the objects are merely to stir up a friendly rivalry and to show the public the number of pupils interested in the school fair movement. At a number of fairs a special place on the programme is given over to an exhibition of physical drill under the Strathcona Trust Fund. The exercises and drills are done very gracefully and are particularly pleasing to the spectators. This develops gracefulness and proper carriage in the pupils. Other competitive features are live stock judging for teams of three boys from each school; apple and weed naming; chicken plucking; relay; buttonhole; darning and mending; solo singing; public speaking and driving and riding contests which are all keenly contested by both boys and girls.

One most interesting feature in the Middlesex Fairs was a " Product Map " in which each school could exhibit one map. The educational feature of this school competition is best described in the words of the Representative from Middlesex County:—

> It was necessary to learn the products of Middlesex, then to ascertain in what sections of the county these products represented the chief industry. Then it was necessary to place on the map the various representations of these products. This was done in various ways: Representing the product by writing its name on the proper section of the map; cutting pictures from farm magazines and pasting on the map in the correct location; drawing on the map pictures of the products; or by attaching the real product where possible; or by miniature representations, that is, in the case of cereal crops a few grains of wheat, barley, etc., being used, in the case of live stock models in wood or plasticine serving the purpose. In a section in which a cheese factory was situated the product was represented by a small piece of cheese, similarly, a tiny sack of flour showed the location of a grist or flour mill.
>
> Thus it is obvious that the resourceful teacher could have all pupils assist in the preparation of the map. The smaller pupils could be engaged in paper cutting and moulding animals while the more difficult work of collecting and selecting material and the drawing could be looked after by the older ones.
>
> In other words, we have in the Product Map a medium for teaching a correlation of such subjects as agriculture, geography, manual training, drawing and language.
>
> The schedule used in judging this year was as follows:
>
> (1) Utility—30—By this we mean that the completed map shall be capable of being used as a map under varying conditions; that is lettering distinct and clear-cut, may be rolled up.
>
> (2) Accuracy—20—True to scale; townships clear cut, lettering neat.
>
> (3) Location of Products for each Area—35—Each product must be located properly.
>
> (4) General Appearance—15—Neatness of material selected, method of attaching articles, cleanliness.

PUBLIC SPEAKING

Public Speaking Competitions are gaining in popularity and a number of boys and girls have an opportunity of accustoming themselves to the public platform. A sample speech from Grenville County is typical of many others and is given herewith:—

> " I have chosen for my subject to-day ' The McIntosh Red Apple.' In the latter part of the 18th century the late Mr. Allan McIntosh moved to Matilda Township, in the County of Dundas, Eastern Ontario. That part of the Province being but newly settled, he with other new-comers erected a small log house in which he and his family lived for some years. In the spring of 1796 Mr. and Mrs. McIntosh went back into a nearby woods to secure a few trees to plant about their home. Among the trees which they secured was a small apple tree. When this tree bore its first fruit the apples were of a beautiful red color, and of a lovely flavor. Mr. McIntosh realizing what the fruit was like, at once started to cultivate it. Then he took the buds and small sprouts from the tree and grafted them on to other trees. In this manner the number of ' McIntosh Red Apple ' trees were soon increased. He afterwards started a nursery, securing small roots from other seedling apple trees grown by other dealers, then grafted his own sprouts on to these roots. Owing to the superior quality of the McIntosh Red Apples the demand for these trees soon exceeded the supply. Mr. Harry McIntosh, the great grandson of the late Allan McIntosh is the present owner of the McIntosh nursery and has several thousand trees bearing fruit from year to year. In the fruit markets to-day, in Montreal. Toronto, Ottawa and other cities, these apples bring from $1.50 to $2 more, wholesale, than any other apples in the market. Some years ago some American nurserymen tried to claim the honor of being the producers of the famous apple, and published long

articles in their papers trying to establish their claim. The people living in Dundas County, to offset this claim, erected a monument by public subscription near the present home of Mr. McIntosh, upon which is a copper plate stating that about 120 rods north of where the monument stands, there still stands the stump of the first McIntosh Red Apple tree, planted by Allan McIntosh in 1796. This stump was only blown down by a storm last summer. Here is a small branch off the original tree which I hold as a souvenir."

DISTRICT CHAMPIONSHIP FAIRS

The District Championship Fair idea is not spreading very fast. This is due, no doubt, to the distance some pupils have to go with their exhibits or the expense involved in shipping them by rail. Then again, all local School Fairs have to be run off so early in September in order to have the first, second and third prize winners compete at the district or county fair. Moreover, a great number of counties have no recognized county fair centrally located and this precludes the possibility of carrying out the championship fair. Where, however, conditions are favorable, the scheme is well worthy of support and from an educational standpoint should be given every encouragement. In addition to the prizes offered in the regular School Fair prize list by the Agricultural Society at the Woodstock Fair, a most interesting competition was conducted in the judging of live stock. The winning stock judging team composed of three boys from each of the ten School Fairs in the county had an opportunity to compete for county honors. The prizes for this competition were: a silver cup; a pure bred lamb as an individual prize for each boy in the winning team, 100 barred rock eggs to each boy in the second team and fifty barred rock eggs to the boys in the third team, the eggs to be distributed to them in the spring of 1920. The Representative, in commenting upon the District Fair, states the Directors of the Woodstock Fair are quite looking forward to the event as an added attraction to their regular programme and that it will stimulate an increase in the number of entries in connection with the fair.

The first school fair was organized in 1909 with three schools taking part. Ten years later, 357 rural school fairs were held in the Province and the pupils had 69,848 home plots and made entries to the number of 111,823. It is estimated that perhaps 250 people saw the first school fair in which some fifty-eight pupils took part, whereas this past fall 92,600 children and 107.590 adults attended the fairs in the Province. This growth speaks for itself.

The most unfortunate thing about school fair work is that more time could not be spent teaching lessons from the exhibits and competitions. At many fairs, however, opportunity is given the judges to explain the reasons why a certain exhibit was placed over another. The desirable type in vegetables and what constitutes quality are explained in order that the pupils may have a better conception of the standard by which such exhibits are judged. Hints or suggestions are given in the preparation of exhibits and these talks are decidedly educational in value.

HOME GARDEN CONTESTS

Considerable interest has been shown by the teen age boys and girls in the contest for gardens on the home farm. Sufficient seed is given to plant a small garden 20 ft. by 30 ft. together with a plan and cultural suggestions in the growing of crops. There are from one to two contests in each county, each contest comprising twenty-five gardens and embracing twenty-five pupils. All told there were seventy Home Garden Contests conducted last year including 1,750 pupils.

The Agricultural Representatives judged the gardens during July and August and awarded prizes for the best kept gardens. Contestants also had the privilege of competing for special prizes offered by some of the Fall Fair boards for the best collection of vegetables from the home garden. Reports would indicate that the quality of the products grown in the gardens was much superior to that of any previous year. One outstanding feature of these competitions is that they demonstrate to farmers the possibilities of producing a lot of garden stuff on a very limited space. Poor varieties formerly used are at once discarded and it has a stimulating effect on the kitchen garden the following year.

COURSES IN AGRICULTURE

The Special four to six weeks' Course in Agriculture conducted by the Agricultural Representatives during the winter months appears to be supplying a need and that it is being appreciated more and more each year by the young farmers of the Province.

During the past eight years 234 Courses were held with an attendance of 5,174 students which is an average of twenty-two per class. The following table might be of interest:—

Year.	No. Courses.	Attendance.
1912	19	377
1913	16	346
1914	28	555
1915	43	1,114
1916	36	888
1917	36	839
1918	32	593
1919	24	462

The Courses are made as practical as possible. The lectures are supplemented by demonstrations in the pruning and spraying of trees and bush fruits, in the candling of eggs, testing of milk and judging of live stock. Students also learn to recognize the impurities commonly found in clover and grass seeds and make germination tests of clovers, corn and other grains.

As during the past the Agricultural Representatives have had the assistance of Special Lecturers for such subjects as Veterinary Science, Beekeeping, Fruit Growing, Marketing and Co-operation, Farm Management and Poultry.

A number of Representatives brought their classes to Toronto to inspect the abattoirs, stock yards, dairy plants, the Parliament Building and other points of interest.

Besides the Literary Society which is organized for the benefit of the members of the class, a popular feature is the class banquet or closing exercises at which prominent farmers and business men are guests. The boys invariably take a prominent part in conducting the banquet and in proposing and responding to the various toasts.

ACTIVITIES OF JUNIOR FARMERS

Perhaps the outstanding feature of the Representatives' work is their activity in connection with the Junior Farmers of their country. They have organized eighty-seven Junior Farmers' Improvement Associations with a total membership of 1,995. The majority of the members have taken the special course in agriculture conducted by the Representative, though provision is made in the constitution for the enrolment of associate members which gives all the young men in the county an opportunity of linking up with an organization designed to better the educational and social conditions in the community.

Briefly stated the members of the various Junior Farmers' Improvement Associations hold at least two meetings during the year, some holding them every two weeks during the fall and winter months. In addition to the regular and special meetings and competing in the various profit competitions conducted by the Department, they arrange for Public Speaking, Live Stock Judging and Plowing Competitions, hold banquets, give plays such as "Back to the Farm," conduct skating parties, garden parties, picnics and debates, arrange for excursions to the Ontario Agricultural College and auto tours to points of interest in the Province.

In some counties where the Junior Farmers' Improvement Associations are active, a County Association has been formed with representatives from each of the local associations to form the executive. The County Executive arranges for inter-association debates, live stock judging and other competitions.

In Waterloo County the Representative and Executive of the County Junior Farmers' Association arranged for a County Live Stock Judging Competition which was held at the close of the fiscal year, the rules and regulations of which are as follows:—

1. Open to all members or Associate members of a Junior Farmers' Improvement Association, under thirty years of age.
2. An entry fee of fifty cents will be charged each competitor.
3. Each competitor will be required to judge all classes of stock. Twenty minutes will be allowed for each class of stock.
4. No competitor will be given more than two prizes.
5. In making awards 50 per cent. will be allowed for Reasons and 50 per cent. for Placing.

Contestants were required to judge ten classes of stock and the prizes in each class were $5, $3, and $2, all money being raised by the various local associations from amongst themselves. The Waterloo County Board of Agriculture donated a special trophy and through the kindness and generosity of The Harris Abattoir Co. of Toronto, the two men standing highest in the total score had a special free trip to Chicago and return, to attend the International Live Stock Exposition. A total of 51 junior farmers took part in the contest.

In York County the Junior Farmers' Improvement Association Union attempts to keep the local associations active by conducting competitions. The following is outlined by the Representative for the year's programme:—

January.—Annual Skating Party.
February.—Annual Public Speaking Contest and Hockey Tournament.
March.—Annual Stock Judging Contest.
June.—Annual County Picnic and Athletic Field Day.

The Wentworth County Junior Farmers' Improvement Association also conducted a Live Stock Judging Competition. Three special prizes were competed for: First, The Royal Bank Trophy and a trip to the International Live Stock Show at Chicago; second, Boards of Agriculture trophy for the team of three boys from one Junior Farmers' Improvement Association which makes the highest score; third, Individual prizes for those securing the greatest number of points. All told, fifty-two competed for honors.

The Representative from Victoria County reports that the various local Junior Farmers' Improvement Associations formed a Debating League and arranged for a series of debates. The Wentworth County Junior Farmers' Improvement Association also held inter-association debates. The subjects debated were:—

"Resolved that a System of License would be Preferable to Present Conditions under the O.T.A."

"Resolved that Money has more Influence in this World than Brains."

"Resolved that Canada is a Better Country to Live in than U.S.A."

"Resolved that the Fear of Punishment has a Greater Influence over Man than the Hope of Reward."

"Resolved that a Teacher's Influence is Greater than a Minister's."

"Resolved that Canada should have Free Trade with the United States."

"Resolved that it would be better to be a Poor Man in a Wealthy Community than a Wealthy Man in a Poor Community."

"Resolved that the Platform is a Stronger Agency than the Press."

"Resolved that the Pen is mightier than the Sword."

"Resolved that Travel is a Better Educator than Reading."

"Resolved that the Form of Government in the United States is Preferable to that of Canada."

"Resolved that Realization has meant more to Humanity than Anticipation."

"Resolved that Canada should own and operate her own railroads as a National Utility."

"Resolved that Co-operation has done more for the world than Competition."

"Resolved that the Home has more influence on human conduct than the School."

The Junior Farmers' Movement has a bright future and is deserving of every encouragement and assistance from those interested in better agriculture.

JUNIOR FARMERS' PLOWING COMPETITION

Considerable interest has been aroused amongst the Junior Farmers in certain counties in plowing competitions conducted on the home farm. Many young men seem to be bashful about taking part at the large Township or County Plowing matches when they know their work will be criticized, but they seem eager to compete when the work is done at home as the plowing has to be done for next year's crop any way and they seem to take more of a pride in work well done on their own farm. The Agricultural Representatives organized and supervised plowing competitions in the following counties:—

County.	No. Contests.	No. Contestants.
Brant	2	5
Dundas	1	12
Grenville	3	21
Lincoln	3	8
Norfolk	1	10
Peterborough	1	8
Waterloo	4	26
Welland	1	6
Wentworth	1	..
Total	17	96

The regulations governing these matches were pretty much the same for all contests and are given herewith:—

RULES GOVERNING JUNIOR FARMERS' PLOUGHING COMPETITION, 1919

1. This competition shall be known as the Junior Farmers' Ploughing Competition.
2. There shall be three classes as follows:

Class 1—In sod, single ploughs, with skimmers, at least 2 acres in one block to be ploughed. Open to young men over 20 and under 30 years of age.

Class 2—In stubble, single ploughs, with skimmers, at least 2 acres in one block to be ploughed. Open to young men 20 years of age and under.

Class 3—In stubble, two furrow ploughs, 3 acres in one block to be ploughed. Contestants to use three horses in ploughing. Strike out and finish included.

3. In every class each man must have at least one strike and one finish.

4. There must be at least 5 entries in each class, and unless 4 complete the contest, no prize will be awarded. Each class may be considered a contest.

5. Ploughing must be done on the home farm or on the farm where the contestant is working.

6. Entries close October 15th.

7. Contesting ploughmen to have their land ploughed and ready for inspection and judging the morning of November 15th. Contestants should arrange to have their land ploughed as near to the time of judging as possible.

8. The Judge will consider conditions for the following year's crop, as well as crown, finish and general land. The decision will be based on the following score card:

General appearance	25
Straightness, evenness and depth	25
Packing and skimming	20
Crown	15
Finish	15

All prizes were secured locally, consisting of cash, implements or other goods, cups and shields.

Representatives and the judges who are supplied by the Department report a great improvement in the quality of the work done over former years. The influence of these matches is not confined to the contestants only, but other farmers in the neighborhood are taking more pains with their plowing which is the basis of all successful farm operations.

PROFIT COMPETITIONS CONDUCTED BY JUNIOR FARMERS

The various competitions conducted under the supervision of the Agricultural Representatives are proving not only popular, but seem to stimulate a great deal of interest amongst the Junior Farmers of the Province in "Cost of Production" and "Profit per Crop or Animal Unit." This interest seems to be more pronounced since the results have been published concerning the Farm Surveys conducted by the Farm Management Department of the Ontario Agricultural College at Guelph. More Junior Farmers are keeping records of farm transactions and are adopting some system of keeping accounts in order that they might study their "Labor Income" a little more intelligently. By competing in these profit Competitions in field crops and live stock they not only run a chance of winning a special prize but obtain valuable and profitable information for themselves and their neighbors.

The acute labor situation and bad weather conditions in some counties prevented many from taking part in these contests.

All the competitions were open to young men under thirty years of age whether they had taken the Course in Agriculture conducted by the Agricultural Representatives or not, though winners in previous contests were not eligible.

The Province was divided into the following three districts and the prize winners had the privilege of a free two weeks' course in one of the Special Short Courses conducted during the winter season at Guelph or Kemptville.

All told there were 152 contestants in the various competitions conducted during the past season.

ACRE PROFIT COMPETITION

There were sixteen contests during 1919 with different crops as follows:—

1 Barley	4 Corn for Silage
2 Wheat	1 Corn for Seed
6 Oats	2 Potatoes

The rules and regulations governing this contest are as follows:—

1. The prize is awarded to the young man showing the largest net profit per acre.

2. There must be 6 entries before a Competition can be held. Unless at least 4 complete the Contest, no prize will be awarded. Where there is only one Acre Profit Competition in the County, and 12 or more entries are secured, and at least 8 complete the contest, two men will receive a prize.

3. Two Competitions (different crops) may be conducted in a County provided six entries are secured in each, but only the first man in each Competition will receive a prize.

4. The crop should be decided by a vote of the competitors, but preference should be given the crop selected by the Agricultural Societies in the district so that the competitors may enter in the Standing Field Crop Competitions.

5. The Competitions must be confined to a field of any size but not less than one acre, except in the case of Oats, Wheat and Barley, when the area under crop must be at least five acres. This will enable the contestants to enter the Standing Field Competitions if they so desire. The Agricultural Representative will inspect the field and see that it is correctly measured.

6. Accurate account is to be kept of all labor, cost of seed, fertilizer, etc. Any contestant who fails to fill out accurately the form supplied by the Agricultural Representative will be disqualified.

7. If possible, the Agricultural Representative or someone appointed by him will be on hand when the crop is measured or weighed.

8. In the fall a uniform price, based on market quotations, will be made throughout the Province for the value of the various crops grown when estimating the net profit.

9. The Representative will certify to each report, and will be held responsible for the accuracy of the statements and figures. All reports must reach this Department before November 15th.

10. Where the Competition is conducted in a grain crop in order to keep the grain separate and avoid delay in forwarding reports waiting for it to be threshed, select a square rod at three or four places in the field, cut by hand, and thresh with a flail.

In estimating cost of production, man labor was reckoned at 30c. per hour, and horse labor at 15c. per hour. Barnyard manure applied to this crop was valued at $1 per ton and to the previous crop at 50c. per ton. The rent of the land was computed on the basis of one-eighth of the selling value of the land in the district where the competition was conducted. A flat charge of $4 per acre was made for plowing; this was figured on the basis of hiring a man and a team at the rate of $6 per ten-hour day.

As in previous competitions nothing was allowed for "overhead" expenses such as a charge for the implements used nor for any depreciation in their value.

In estimating profits the following values were placed on the seed:—

	Used in Planting.	Product harvested.
Potatoes	$1 65 per bushel	$1 50 per bushel
Spring Wheat	3 00 "	2 05 "
Barley	2 00 "	1 25 "
Oats	1 25 "	95 "
Corn for Seed	4 00 "	1 50 "
Corn for Silage	4 00 "	4 00 per ton

The list of winners with particulars concerning yield, cost of production and profit per acre are given herewith:—

ACRE PROFIT COMPETITIONS.

WHEAT

County	Winner	Yield	Value	Cost Production	Profit
		bus.	$ c.	$ c.	$ c.
Manitoulin	Roy Becks, Mindemoya Sandy loam, following barley, farmed 12 years, formalin, Marquis.	21⅗	44 28	18 34	25 94
Renfrew	James Leitch, R.R. No. 3, Renfrew Clay, following barley, farmed 40 years, 5 loads manure, formalin, Marquis.	11¾	24 08	21 18	2 90

OATS

County	Winner	Yield	Value	Cost Production	Profit
		bus.	$ c	$ c	$ c.
Lincoln	John E. Hurd, Grimsby Black loam, following hay, farmed 25 years, formalin, Canadian King.	50⅖	47 88	20 73	27 15
Norfolk	E. Deloss Sandham, R.R. No. 4, Tillsonburg Clay loam, following wheat, farmed 80 years, formalin, O.A.C. No. 72.	50½	47 99	23 38	24 61
Lambton	Robert A. Auld, Watford Clay loam, following beans, farmed 20 years, 1 load manure, O.A.C. No. 72.	41	38 95	20 90	18 05
Frontenac	Earl R. Kemp, R.R. No. 1, Wolfe Island Blue clay following hay, farmed 40 years, formalin, O.A.C. 72.	34½	32 77½	17 79	14 98½
Middlesex	Stanley Merrill, Lambeth Clay loam, following potatoes and turnips, farmed 40 years. O.A.C. No. 72.	41	38 95	24 35	14 60
Brant	Allan Crumback, Scotland Clay loam, following hay, farmed for years, formalin.	21	19 95	22 40	2 45 (loss)

CORN FOR SILAGE

County	Winner	Yield	Value	Cost Production	Profit
		tons	$ c.	$ c.	$ c.
Dundas	Cecil M. Wallace, Iroquois Sandy loam, following potatoes, 15 loads manure, King Philip.	28¾	115 00	31 61	83 39
Simcoe	Frank Rumney, R.R. No. 1, Victoria Harbour Clay loam, following hay, farmed 20 years, 12 loads manure, North Dakona.	24	96 00	37 25	58 75
Peterborough	Percy W. Gardener, Norwood Sandy loam, following pasture, farmed 50 years, 7 loads manure, Eureka.	21⅘	87 20	31 62	55 58

CORN FOR SILAGE—Continued

County	Winner	Yield	Value	Cost Production	Profit
		tons.	$ c	$ c.	$ c.
Peterborough....	Roderick Barrie, Norwood........ Dark clay, following hay, farmed 60 years, 4 loads manure, Winconsin No. 7	20⅓	81 33	29 60	51 73
Norfolk	Austin Kelly, R.R. No. 1, Courtland Sand, following pasture, farmed 25 years, 30 loads manure, Smut Nose.	11⅕	44 80	35 39	9 41

POTATOES

County	Winner	Yield	Value	Cost Production	Profit
		bus.	$ c.	$ c.	$ c.
Sudbury........	Leo. Lamoureux, Chelmsford ...... Loam following potatoes, farmed 15 years, 5 loads manure, Green Mountain	314	471 00	91 50	379 50
Carleton	Jos. A. McCordick, North Gower.. Clay loam, following hay, farmed 75 years, 12 loads manure, formalin, Green Mountain	288	432 00	89 10	342 90

BARLEY

County	Winner	Yield	Value	Cost Production	Profit
		bus.	$ c.	$ c.	$ c.
Kenora	Oskar Kurz, Waldhof .... Dark brown loam, following potatoes and clover, farmed four years, O.A.C. No. 21	37	46 25	28 65	17 60

CORN FOR SEED

County	Winner	Yield	Value	Cost Production	Profit
		bush.	$ c.	$ c.	$ c.
Essex	Irvin, Johnson, R.R. No. 2, Kingsville .... Clay loam, following pasture, farmed 25 years, five loads manure, Bailey	34	51 00	30 32	20 68

In studying these figures, it will be noted there is a marked similarity as to cost of production of any one crop though the yields vary considerably. This is only to be expected when differences as to variety, soil, climatic and other conditions are taken into consideration. Moreover, in a competition of this nature, each contestant naturally selects the best piece of land on the farm and it is given "above the average" attention.

While the profits per acre in some crops may appear large they are due to a combination of circumstances—large yields and high prices. They do not by any means represent average conditions and hence the impression should not go abroad that farmers all over the Province are making such huge profits on their farms. There is an additional incentive to secure high yields and low production costs and that is the special prize which is offered and the honor that is attached to being first in the competition.

DAIRY PROFIT COMPETITION

In the Dairy Profit Competition there were three contests last season.

The regulations governing this contest are given below:—

1. The prize will be awarded to the young man showing the largest net profit from one heifer.

2. There must be four entries before a competition can be conducted and unless three complete the contest no prize will be awarded. If there are eight entries and six complete the contest, two men will receive the prize. Entries close May 1st, 1919.

3. The competition will extend over a period of seven months.

4. A heifer freshening for the first time must be used. A heifer must not be over thirty-six months of age at the time of freshening. Only one may be entered by each contestant, and no change of heifers can be made after the record work begins.

5. At the time of entry the Agricultural Representative will inspect the heifer and make a record of its markings.

6. The contestant must feed, milk and have full charge of the heifer, and must weigh and take samples of the milk.

7. Each contestant must take a two-ounce sample of the milk (one ounce in a.m. and one ounce in p.m.) three times a month, preferably the 10th, 20th and 30th of the month, and at the end of each month forward samples to a place determined by the Representative, where they will be tested for butter fat.

8. Milk must be weighed and recorded at each milking on forms supplied by the Representative. At the end of each month, the contestant will mail form for the month to the Agricultural Representative.

9. An accurate account must be kept of the kind and amount of feed consumed. The Agricultural Representative will supply forms on which to give record of feed consumed each month. The contestant will fill in form (in duplicate) each month and mail to the Agricultural Representative. The Representative will add the other data required to determine the net profit for the month and return one form to the contestant. At the close of the competition, the Representative will total these monthly statements and fill out final report forms (in typewriting) for each contestant. Final report forms will be supplied by the Department.

10. Any contestant who fails to fill out accurately the forms supplied by the Representative will be disqualified.

11. The milk will be valued on the following basis:—
First three months, butter fat valued at 50c. per lb.
Second three months, butter fat valued at 53c. per lb.
Last month, butter fat valued at 55c. per lb.

The total amount of skim milk or by-product (obtained by subtracting the total pounds of butter fat from the total production of milk during the test) will be valued at 20c. per cwt., and credited to the total receipts in making up the final report.

12. The Agricultural Representative will visit each contestant at least twice during the competition, see one milking weighed and take a sample for testing.

13. All final reports must reach this Department by December 15th. The Representative will be held responsible for their accuracy.

In compiling the results feed was valued as follows:—

Ground Oats	$63 00	per ton.	Cotton Seed Meal	$84 00	per ton.
“ Barley	60 00	“	Gluten Feed	70 00	“
“ Peas	90 00	“	Hay	18 00	“
“ Rye	65 00	“	Alfalfa	20 00	“
“ Wheat	80 00	“	Straw	8 00	“
“ Corn	70 00	“	Silage	4 00	“
Corn on the Cob	65 00	“	Roots	5 00	“
Bran	45 00	“	Green Feed	2 00	“
Shorts or Middlings	52 00	“	Pasture	1 00	per month.
Oil Cake	85 00	“			

From details of the completed forms submitted the final results have been summarized:—

DAIRY PROFIT COMPETITION, 1919

County and Winner	Value of feed	Milk	Fat	Fat	Value	Skim Milk	Value	Net Profit
	$ c.	lbs.	%	lbs.	$ c.	lbs	$ c.	$ c.
Grenville— Chas. P. Harris, Oxford Mills. Holstein.	33 80	6,225	4.1	252.1	131 78	5,974	11 92	109 90
Wentworth— Albert Krick, Stoney Creek. Holstein.	62 75¾	8,496¾	3.13	265	141 05	8,122.4	16 21	94 51
Norfolk— Roy Manary, R.R. No. 3, Delhi. Holstein.	14 48	4,051	4.05	164. 5	84 90	3,886.4	7 76	78 18

The winner for the Province, Chas. P. Harris, of Oxford Mills, age 12, was a member of the Grenville Holstein Heifer Calf Club. The heifer was born on March 16th, 1917, calved April 16th, 1919, and was therefore two years and one month old when she dropped her first calf and when the record work began.

HOME DEMONSTRATION WORK

The service rendered by the Home Demonstrator in Peel County under the direction of the Agricultural Representative is being appreciated very fully by the women and girls not only in the rural sections but in the towns and villages as well.

The Home Demonstrator arranged and conducted special short courses in Home Nursing and First Aid, Sewing, Home Economics and Physical Culture at different points in the county which were attended by a goodly number of girls.

As District Secretary of the Peel County Women's Institutes the Home Demonstrator is kept pretty closely in touch with the activities of the sixteen active branches. Besides this feature of her work five Junior Institutes and Girls' Clubs have come into existence through the instrumentality of the Home Demonstrator. Home and community problems are tackled and solved through the Institutes with the Home Demonstrator giving the necessary leadership.

One of the most novel and interesting features was a Girls' Canning Competition conducted through the Junior Institutes at the Brampton Fall Fair. Teams of four girls from the Junior Institutes of Caledon, Alton, Ebenezer, Palgrave and Streetsville competed for honors. Each team was given only the equipment found in any farm kitchen and they demonstrated the actual work of canning fruit and vegetables. In addition to the demonstration on the day of the Fair, each team had to exhibit home canned materials consisting of not more than fifteen jars and might be any native fruits or vegetables with one jar each of meat, jelly and pickles. The Ebenezer team won first place, the prize consisting of a two-compartment steam cooker for each girl. Caledon team came second, each girl carrying off a Boston Cooking School Cook Book. In addition the twenty girls were given souvenir pins engraved "Peel County Canning Competition, 1919." The produce canned that day were donated to the Children's Shelter.

Demonstrations in Canning were also given at the Fall Fairs held at Caledon and Cooksville and these proved not only interesting but very instructive to the great number of people who attended.

Another special feature of the Home Demonstrator has been visits to the rural schools of the county. In all, seventy-two schools were visited and practical talks and demonstrations were given to the pupils, teachers and trustees. These had to do with brush drill, hot lunch, school gardens, health matters and dental clinics.

Some idea of the work of the Home Demonstrator can be obtained from the fact that she addressed 97 meetings which were attended by 4,909 people; 259 homes were visited, 42 newspaper articles were written, 751 letters were received and 770 sent out in addition to 2,263 circular letters; there were 689 callers at the office, besides 686 phone calls, and 3,694 bulletins were distributed.

BABY BEEF COMPETITION

During the past year there were four Baby Beef Competitions completing the record work; these were in the Counties of Waterloo, Wellington, Brant and Huron.

The regulations issued in regard to this competition are as follows:—

1. The prize will be awarded to the young man producing the best steer.
2. There must be 5 entries before a competition can be conducted, and unless 3 complete the contest, no prize will be awarded. If there are 8 entries and 6 complete the contest, 2 men will receive the prize. Entries close December 1st, 1919.
3. Each contestant has the privilege of selecting several calves at the time of entering and discarding the less promising ones as they develop.

4. At the time of entry the Agricultural Representative will inspect the calves and mark with ear tags or some equally suitable way.
5. Calves may be either pure bred or grades.
6. The calves used in this competition must be born on or after September 1st, 1918. Heifers will not be eligible.
7. Calves must be fed and cared for by contestant. An accurate account must be kept of the kind and amount of food consumed.
8. The steers will be judged in November, 1919.
9. After the winners in each county have been selected, the first prize steer in each county, and all, if thought advisable, may be sent to the Winter Fair at Guelph and Union Stock Yards, Toronto, and shown against winners in other counties. Liberal prizes will be awarded.

In the beef-producing districts, this contest proved an interesting one. In view of the fact that cost of production was not considered, contestants within the county vied with each other to produce the best steer in order that they might win out in the higher competition when the winning steers from other counties competed for provincial honors at the Winter Fair at Guelph. All told, 12 steers were exhibited at the Guelph Winter Fair, and all were of good quality.

Feed was valued as follows:

Ground Oats	$63.00	per ton
" Barley	60.00	" "
" Peas	90.00	" "
" Corn	70.00	" "
Bran	45.00	" "
Oil Cake	85.00	" "
Hay	18.00	" "
Alfalfa	20.00	" "
Straw	8.00	" "
Silage	4.00	" "
Roots	5.00	" "
Green Feed	2.00	" "
Pasture	.75	per month
Nursing Cow	6.00	" "

In arriving at the net profit, the steers were valued at 18c. per cwt. Some of these steers were exhibited at the Toronto Fat Stock Show and brought from 19½c. to 35c. per lb.

The results of the Baby Beef Competition are tabulated herewith:—

County Winner and Breed	Date of Birth	Total cost of feed consumed plus initial value of steer ($5.00)	Weight of steer	Value	Net profit	Total score on conformation according to score card
		$ c.	lbs.	$ c.	$ c.	
Waterloo— Leslie W. Turnbull, R.R. No. 3, Galt. Shorthorn.	Oct. 1, 1918	101 60	1,000	180 00	78 40	93
Brant— R. Wilson Douglas, R.R. No. 2, Caledonia Shorthorn.	....	102 09	950	171 00	68 91	74
Wellington— T. K. Henderson, R.R. No. 7 Guelph. Shorthorn.	April 1, 1919	85 46	750	135 00	49 54	85
Huron— Wm. Essery, R.R. No. 1, Centralia. Angus Grade.	Jan. 8, 1919	111 71	800	144 00	32 29	89

The shorthorn steer fed by Leslie Turnbull, of Galt, received new milk for the first month and a liberal allowance of skim milk during the remainder of the period. He also received hay during the entire period, ensilage during the winter months and a mixture of barley and oat chop with some oil cake meal after one month old.

FEEDING HOGS FOR PROFIT COMPETITION

In the Feeding Hogs for Profit Competition seventeen contests were concluded with a total of fifty-nine farmers' sons taking part. This is perhaps the most popular competition because it entails the least amount of labor, usually reveals some valuable data and encourages young men to pay greater attention to the care and feeding of swine.

The regulations are as follows:—

1. The winners will be selected on the following basis:
   (a) 50 points for the highest net profit per cwt.
   (b) 25 points for type and finish, this being done with the bacon hog score card.
   (c) 25 points for the best kept records and most comprehensive report.
2. There must be six entries before a competition can be conducted and unless four complete the contest no prize will be awarded. If there are twelve entries and eight complete the contest, two men will receive the prize. Entries close July 1st and feeding period must be concluded by December 1st.
3. Each contestant must feed a pen of hogs containing not less than four.
4. Contestants must notify the Agricultural Representative in advance when the hogs attain the age of six weeks and at the time of entry the Representative will inspect the hogs and mark with ear tag or in some equally suitable way.
5. Hogs are to be weaned at six weeks and fed and cared for by the contestant. An accurate account must be kept of the kind and amount of food consumed every four weeks in addition to the final feeding. Any contestant who fails to fill out accurately the form supplied by the Representative will be disqualified. Credit will be given those who weigh their hogs at the end of every four weeks, though this is not compulsory.
6. The contestant must notify the Agricultural Representative three days before the hogs are to be finally inspected and weighed, which must be done when they have reached a weight anywhere between 180 and 220 lbs. One point will be deducted for each 5 lbs. or fraction of 5 lbs. under or over those weights. The Agricultural Representative or someone appointed by him will be present to certify to weights.
7. Hogs may be finished any time within 28 weeks of age.
8. The Representative will certify to each report and will be held responsible for the accuracy of the statements and figures. All reports must reach this Department by December 1st.
9. Special prizes for the winners of these competitions will be awarded at the Winter Fair at Guelph, and at the Union Stock Yards Show, Toronto. The Stock Yards will arrange for the sale of the hogs if the competitors so desire.

Feed was valued as follows:—

	PER TON		PER TON
Ground Oats	$63.00	Oil Cake	85.00
" Barley	60.00	Cotton Seed Meal	$84.00
" Peas	90.00	Gluten Feed	70.00
" Rye	65.00	Low Grade Flour or Red Dog	70.00
" Wheat	80.00	Tankage	100.00
" Corn	70.00	Skim Milk	8.00
Corn on the Cob	65.00	Butter Milk	5.00
Bran	45.00	Whey	4.00
Shorts or Middlings	52.00	Pasture per hog	1.00

The profit per hundred pounds gain in weight from six weeks of age was estimated on the basis of 17½c. per lb.

The summarized statement of the results is appended herewith:—

FEEDING HOGS FOR PROFIT COMPETITION

County and Winner	Length of feeding period		Av. wt. when 6 weeks old	Av. wt. of hogs live wt.	Av. gain in wt. from 6 weeks	Value per hog of gain in wt.	Total Score
	Dates	Days					
			lbs.	lbs.	lbs.	$ c.	
Carlton— Clifford B. Pollock, North Gower. Yorkshire.	June 9–Oct. 13	110	25	217⅔	192⅔	33 70	....
Norfolk— Edward W. Sandham, R.R. No. 4 Tilsonburg. Chester White and Tamworth.	April 7–Sept. 10	136	21	201	180	31 50	92
Grey— James M. McCallum, R.R. No. 1 Ravenna. Cross Bred.	May 31–Nov. 26	154	25	232	207	36 22	....
Rainy River— Albert Gamsby, Stratton. Yorkshire.	May 28–Nov. 26	160	18½	192	173½	30 36	....
Frontenac— J. W. Keyes, Wolfe Island. Grades.	May 12–Sept. 3	100	30¼	187	156¾	27 43	90
Durham— John H. Jose, Newcastle. Improved English York.	June 1–Sept. 9	87	23	197½	174½	30 54	89.1
Brant— W. L. Houlding, R.R. No. 1 Mohawk. Berkshire-Yorkshire.	March 2–July 21	122	10	195½	185½	32 46	....
Granville— Edmond Beckett, Oxford Mills. Yorkshire-Berkshire	June 13–Oct. 4	97	30	198	168	29 40	85.3
Wentworth— Wm. Watson, R.R. No. 1 Galt.	March 10–Sept. 10	158	30	216	186	32 55	....
Waterloo— D. J. Lerch. R.R. No. 2 Preston. Yorkshire.	May 29–Nov. 10	142	22¼	182½	160¼	28 04½	96
Manitoulin— William Williams, Elizabeth Bay. Yorkshire.	June 22–Oct. 26	108	35	192½	157½	27 56¼	82.8
Sudbury— Geo. W. H. Stone, Spanish. Yorkshire.	May 23–Oct. 10	120	25	197	172	30 10	....
Victoria— Casey H. Flett, R.R. No. 2 Fenelon Falls. Yorkshire-Chester White Cross.	June 4–Sept. 22	95	22	196	174	30 45	....
Middlesex— Alex. Woods, R.R. No. 1 Dorchester. Yorkshire.	May 26–Oct. 27	132	30	206½	176½	30 88	....

FEEDING HOGS FOR PROFIT COMPETITION—continued

County and Winner	Length of feeding period.		Av. wt. when 6 weeks old	Av. wt. of hogs live wt.	Av. gain in wt. from 6 weeks	Value per hog of gain in wt.	Total Score
	Dates	Days					
Kenora—			lbs.	lbs.	lbs.	$ c.	
Norman McMillan, Dryden. Yorkshire.	July 7– Dec. 8	132	39½	225	185½	32 46	....
Ontario—							
Alvin E. Shier, R.R. No. 2 Cannington. Tamworth-Yorkshire.	March 1– July 17	100	36	226	190	33 25	96.2
Lambton—							
Gerald M. Robertson, Watford. Yorkshire.	May 9– Oct. 23	95	23	180	157	27 47	92

In checking over the forms it is found that the average cost of feed per hog for a total of seventy-five hogs amounts to $16.76; the average net profit per hog, $14.08; the average net profit per cwt. of gain from six weeks of age, $7.45; the average length of feeding period was 120 days and the average gain in weight from six weeks of age is 182 lbs., or a gain of 1½ lbs. per day during the feeding period.

In a competition of this nature each contestant has the privilege of selecting not less than four of the most thrifty, promising looking ones of the litter. In this way all the unthrifty, weak and inferior hogs are discarded and as a consequence the pen of hogs in the contest are considerably above the average run of hogs the farmers feed. They would, therefore, make more economical gains and the profit per cwt. of gain would be greater. Due allowance should, therefore, be made when using these figures to encourage farmers to keep more brood sows with the idea of increasing the bacon output from the farms.

LAND CLEARING COMPETITION

A competition in the clearing of land was conducted by the Agricultural Representative from Kenora with six competitors. The competition was confined to a measured acre of uncleared land. The land was cleared and broken during the fall of 1918, was seeded to either oats or barley and alsike clover during spring of 1919, and the grain crop harvested. Accurate account was kept of cost of labor, clearing, cultivation, seed, etc., and a report was submitted by the contestant. The prize, a two weeks' course in practical agriculture at the Monteith Demonstration Farm was awarded on the basis of cost of production and profit of the crop harvested, efficient clearing, freedom from weeds, and other impurities and report submitted. The results are given herewith with the object of showing the relative ease of putting land under cultivation in Kenora District.

Name and Address	Crop	Yield	Cost of Prod.	Value	Profit or Loss	Prize
Jas. Guthrie, Dryden	Oats	75	$32 35	$71 25	P. $38 96	1st
S. Peterson, Eagle	Barley	48½	40 80	60 62	P. 19 82	2nd
C. Anderson, Eagle	Barley	15	20 30	18 75	L. 1 55	3rd
C. Norgate, Dryden	Barley	30	39 50	37 50	L. 2 00	4th
Jno. Guthrie, Dryden	Oats	49	51 95	46 55	L. 5 40	5th
A. Thomas, Oxdrift	Barley	28	43 55	35 00	L. 8 55	6th

The Representative states: "With the exception of the first prize winner, the cost of clearing in the other cases was much the same, that is to say, one can figure that in this district, one of the cheapest crops, being grain, will very often pay for the clearing of the land from the first crop."

CALF COMPETITION

A competition for boys and girls under nineteen years of age to stimulate interest in the raising of heifer calves to six months of age was conducted by the Agricultural Representative from Kenora. All told, twenty-one boys and girls entered the contest, each one had the privilege of selecting several calves at the time of entry on or before May 1st, and discarding the less promising ones as they developed. Calves had to be fed and cared for by the contestant and they also had to submit an essay on "How I Raised my Calf." The prize was awarded on the following basis:—

Essay submitted	25%
Condition of calf	25%
Training given	25%
Type of calf according to breed represented	25%

The following are the prize winners:—

Name and Address	Age	Condition	Training	Type	Essay	Total
Thelma Washburn, Minnitaki	13	24	24	23	24	95%
Dorothy Tyler, Eagle River	15	23	24	23	22	92%
Violet Launder, Minnitaki	13	23	22	22	21	88%
John Dunlop, Oxdrift	13	22	22	21	21	86%
John Creerer, Oxdrift	14	22	21	21	21	85%
Clifford Lewis, Oxdrift	12	21	22	20	21	84%
Ella James, Oxdrift	16	20	20	21	22	83%

The special attractive first prize was a pure-bred Holstein heifer calf donated by Mr. Gordon S. Gooderham, Manor Farm, Clarkson, Ontario. The second and third prizes of $5 each were donated by the Dryden Agricultural Society. The 4th, 5th, 6th and 7th prizes were $4, $3, $2 and $1, respectively, donated by the Kenora Dairy Association. Besides these prizes the first and second winners will receive a free two weeks' course in Domestic Science to be held at the Monteith Demonstration Farm in July, 1921.

INTER-COUNTY LIVE STOCK JUDGING COMPETITION

Perhaps the most popular competition in which Junior Farmers compete is the Inter-County Live Stock Judging Competition conducted annually at the Winter Fairs at Guelph and Ottawa. Teams of three boys under twenty-five years of age, trained by the Agricultural Representatives had to judge two classes of Beef Cattle, Dairy Cattle, Sheep, Swine and Heavy Horses, write their reasons and also give them orally before expert judges. Fifty per cent. was allowed for correct placing and fifty per cent. for good reasons.

At the Ontario Provincial Winter Fair at Guelph, twenty-one teams competed for the Duff Trophy, Oxford County winning the cup as the following score will indicate:—

Guelph, Dec. 6, 1919

County	Dairy	Beef	Sheep	Swine	Horses	Total	
Oxford	450	444	531	540	400	2,365	
Waterloo	440	513	461	561	357	2,332	
York	449	483	459	417	431	2,239	
Victoria	404	469	527	376	434	2,210	
Halton	435	426	478	447	393	2,179	
Durham	475	395	434	448	426	2,178	
Essex	487	383	430	450	406	2,156	
Grey	418	425	424	458	400	2,125	
Brant	415	425	448	447	386	2,121	
Wentworth	425	292	501	397	444	2,059	
Wellington	446	389	450	459	307	2,051	
Bruce	468	361	484	403	302	2,018	Tie
Peel	448	403	480	252	435	2,018	
Middlesex	406	414	404	333	427	1,984	
Lambton	413	396	481	337	356	1,983	
Huron	407	421	450	360	299	1,937	
Ontario	428	390	428	306	361	1,913	
Lincoln	375	368	475	267	379	1,864	
Simcoe	442	288	380	401	342	1,853	
Norfolk	378	267	446	291	412	1,834	
Welland	369	275	422	325	380	1,571	

The Peter White Trophy which is competed for at the Ottawa Winter Fair was won by Carleton County, details of which are given below:—

County	Dairy Cattle	Beef Cattle	Sheep	Swine	Horses	Total
Carleton	366	444	277	418	308	1,813
Leeds	479	308	352	375	263	1,777
Grenville	243	460	323	367	359	1,752
Lanark	346	363	422	368	245	1,744
Dundas	268	322	256	363	297	1,506
*Glengarry	355	246	260	300	216	1,377
Lennox and Addington	279	269	289	333	192	1,362

* Only two men competed from Glengarry County.

CHAMPIONSHIP JUDGING COMPETITION

The winners of the Judging Competitions at Guelph and Ottawa competed for the handsome championship cup presented by the Union Stock Yards and the Toronto Packers on March 4th and 5th. The contest was conducted in Ontario County and the following farms were visited where stock was judged:—

Beef Cattle.—W. A. Dryden, Brooklin; G. W. McLaughlin, Oshawa.

Dairy Cattle.—G. H. Hunter, Brooklin.

Sheep.—G. W. McLaughlin, Oshawa; Wm. Smith & Son, Columbus.

Heavy Horses.—Smith & Richardson, Columbus.

Swine were judged at the Union Stock Yards. Every courtesy was shown the members of the judging teams and all expenses of the two teams were paid by the Union Stock Yards Co. In addition, the boys were banqueted at the Walker House, where the trophy was presented to Oxford County, the winning team. The following is the score between Oxford, winners at Guelph, and Carleton, winners at Ottawa:—

——	Oxford	Carleton
Dairy Cattle	480	360
Beef Cattle	490	427
Heavy Horses	471	443
Sheep	286	303
Swine	496	415
Total	2,223	1,948

The names of the championship team from Oxford County are: Burns McCorquodale, Embro; John Blair, Embro; Max Butcher, Embro.

The names of the Carleton County boys who lost by 275 points are: Echlin Croskery, Kinburn; Lloyd Armstrong, Kinburn; E. Armstrong, Kinburn.

BOYS' AND GIRLS' LIVE STOCK CLUB WORK

The Boys' and Girls' movement bids fair to rival School Fair work as the most popular feature of Agricultural Extension Work. Perhaps, this is due to the fact that boys and girls literally love animal pets—something that is alive and responds to care and kind treatment. Moreover, because they can call the calf, pig or sheep their very own and because some day they hope to sell their animal at a profit and spend the money as they wish, it sustains and animates their interest.

Wherever these live stock clubs have been organized the Representatives have the active support and co-operation of the live stock men in the community. This augers well for the future of Ontario's Junior Farmers. The boys are commencing early in life to get into the pure-bred live stock game and it is confidently hoped that they will receive every encouragement from their parents and others.

The first live stock club for boys and girls came into being not much over one year ago. Counting those which were formed previous to the period covered by this report and those that were organized last year, there are six Calf Clubs, ten Pig Clubs, two Sheep Clubs and two Live Stock Clubs, or a total of twenty Boys' and Girls' Live Stock Clubs with a membership of 450. This is merely a small beginning, but a number are now in the process of formation and the work will soon spread to every county in the Province.

In the purchasing of animals, arrangements are usually made with the local banks to advance the necessary funds on the security of a note from the boy or girl for a definite period at a fixed rate of interest. These notes must be endorsed to the satisfaction of the bank by their parents or guardians. Invariably nothing but pure-bred animals are purchased and these are registered in the name of the boy or girl. As a protection the animals are insured until such time as the notes are paid at the bank.

PIG CLUBS

The following is a summarized statement of the Pig Clubs so far organized:—

County	Name of Club	Date of Organization	Membership	Age of Members	Date of Distribution of Stock	Breed and Age of Stock Distributed	Price
Dufferin.	Grand Valley Pure Bred Yorkshire Pig Club	Nov. 1918	10	11–28	Nov. 13, 1918	Yorkshire sow (bred) 1 year	$ c. 70 60
	Melancthon Township Pig Club (pure bred)	Spring 1919	13	7–15	Apr. 19, 1919	Yorkshire sow (bred) 10 months	71 43
	Amaranth Township Pig Club	April 1919	11	8–17	May, 1919	Yorkshire, 1 pure bred and 1 grade to each member, 7–10 weeks	Av. 17 00
Dundas.	Finch Pig Club	March 1918	46	12–17	Allowed to choose own stock	Yorkshire, 1 pure bred sow 6 weeks	7 00– 12 00
Essex.	Essex County Duroc-Jersey Pig Club	June 7, 1919	47	10–16	June 7, 1919	Duroc-Jersey, 1 pure bred sow and 1 grade pig to each member 3 months	pure breds 20 00 grades 8 00
Grey.	Collingwood Pig Club	May 1919	26	10–18	June 25, 1919	Yorkshire (pure bred), sow 6 weeks to 6 months	16 00– 41 00
Lennox and Addington.	Lennox and Addington Pig Club No. 1	March 1918	49	10–19	....	Yorkshire (pure bred)	
	Lennox and Addington Pig Club (pure bred and grades) No. 2	April 1919	5 girls and 14 boys	10–18	April & May, 1919	Yorkshire (1 pure bred sow, 1 grade pig) 8–10 weeks	pure breds 15 00 grades 6 00– 8 00
Peel.	Ebenezer J.F.I.A. Pig Club	June 1918	8	Junior Farmers	July 6, 1918	Yorkshire, pure bred sow (bred) 7–8 months	50 00
Wentworth.	Wentworth Pig Club	May 1918	40	....	....	Yorkshire grade 6–8 weeks	

The rules of the Essex County Duroc Jersey Pig Club which are typical of many others organized are given herewith:—

Conducted under the auspices of the Ontario Department of Agriculture, Essex County Branch, and the Imperial Bank of Canada, Essex Branch:

Any boy or girl who will agree to the conditions of the Club between the ages of 10 and 18 years, may become a member.

The objects of the Club shall be to create a greater interest in hog raising in Essex County, which is so well adapted to this industry. To give the members of the Club the latest information on feeding and caring for hogs, and to create more interest in farm work in general, and live stock in particular.

The Club will be organized by the Agricultural Representative for Essex County, and the money necessary will be advanced by the Imperial Bank, Essex, Ont.

Each member will receive two pigs, about two months old, one a registered Duroc Jersey gilt, and the other a Grade. The pure-bred pig must be bred to a pure-bred boar in the fall, and the Grade pig sold to pay the loan on December 1st.

Each member must sign a note endorsed to the satisfaction of the Manager of the Bank for $28.00, payable December 1st at 7 per cent. interest. The pure-bred gilt costs $20, Grade pig $8, both being sold to members at cost.

The child's parents must agree to furnish a suitable pen and yard, and to supply the member with sufficient quantity of suitable feed, and also one-quarter acre for pasture.

Each member must care for the pig in person, and to supply a balanced ration according to instructions given by Department of Agriculture.

Forms will be supplied to record the amount and kind of feed fed, and weight of each pig at end of each month.

The pigs will be distributed from Essex on Saturday afternoon, June 7th, and each member and parent must be present to receive their pigs, and sign their note. The pigs well be numbered, and the numbers drawn from a hat, and each member must take the pigs drawn.

The pigs will be selected from well-bred stock by competent judges, and the pure-bred will be registered in the member's name.

Each member will be visited during the summer, and given suggestions on care, and scored on condition of pigs.

Two competitions will be conducted, and generous prizes awarded. The basis of the awards will be:

Class 1.—Feeding and Care.

(a) 50 points for highest net profit per cwt.
(b) 25 points for condition when visited in summer.
(c) 25 points for best kept records and report.

In this competition the hogs will be valued at a uniform prevailing market price, and market prices will be used in calculating cost of feed.

Class 2.—Exhibition.

Duroc Jersey gift exhibited at Essex Fair.

Considerable money has been granted for these competitions.

The Club will be limited to the first fifty suitable applicants on the enclosed application blank.

The Representative states in his annual report:—

"The exhibit of Pig Club gilts at the Essex Fair demanded a great deal of attention and commendable criticism. Twenty pigs were shown. This has been one of the most pleasing phases of the work this season as it has been instrumental in getting forty-seven boys and girls interested in pure-bred hogs. The class of Duroc Jersey sows at the Essex Fair for six months and under nine months, and for under six months were all won by Pig Club members, as well as first and second prize for Duroc Jersey sows in the Show."

Some other Pig Clubs organized differ from the Essex Club in that a pure-bred sow safe in pig, is distributed to each member instead of two pigs about six weeks of age. In the former case the initial outlay is greater, but the members perhaps will realize more quickly on their investment.

The Representative from Dufferin County cites two instances as to the value of Pig Club work from a financial standpoint:—

"One member of the Grand Valley Club received a sow for which his note was $72 plus interest. For his first litter, he received on May 1st, $135, and at last reports, had a second litter of nine pigs. A member of the Melancthon Club whose note called for $74 plus interest sold his litter of eight pigs when ready to wean for the value of his note and $50 cash. Others have done as well."

CALF CLUBS

Both Dairy and Beef Calf Clubs have been organized during the past year. Details follow of the name of the club together with the breed of stock distributed.

County	Name of Club	Date of Organization	Membership	Age of Members	Date of distribution of stock	Breed and Age of Stock distributed	Price $
Dufferin	Dufferin County Shorthorn Calf Club	March, 1919	10	....	During Spring as selected & purchased	Scotch-topped Shorthorned heifers (in calf) 20-28 mos.	265–350
Grenville ...	Grenville County Holstein Calf Club	Feb. 25, 1919	10 boys & 4 girls	9–17	Apl. 3, 1919	Pure-bred Holstein heifer (in calf) 2-3 years	150–225
Halton	Halton County Shorthorn Calf Club	Dec., 1918	28	10–24	....	Pure-bred Shorthorn heifers 8-12 mos.	150–225
Kent	Shorthorn Calf Club	....	8	10–18	Aug. 25, 1919	Shorthorn 10 mos.–3 years	125–300
Lennox and Addington	Lennox and Addington Calf Club (pure-bred)	Spring, 1919	8 boys & 4 girls	10–18	....	7 Holstein and 5 Shorthorn heifers under 6 mos.	60–100
Peel........	Peel County Calf Club	Sept., 1818	58	10–18	Oct. 19, 1918	10 Pure-bred Holsteins, 26 Grade Holsteins, 8 Ayrshire Grade 11 Jersey pure-bred, 3 Jersey Grades 20-24 mos,	143–171 63–83 53–75 103–125 73

The Dufferin County Shorthorn Calf Club organized last March with ten members has regulations similar to those of other Calf Clubs formed in the Province, but there was no special day set apart for distribution of the stock. The animals were purchased to suit the convenience of members and this, according to the Representative, practically resolved the Club into a special order one.

DUFFERIN COUNTY SHORTHORN CALF CLUB

The constitution and regulations are as follows:

1. The Club shall be known as the Dufferin County Shorthorn Calf Club, 1919.

2. The objects of the Club shall be: (1) To create a deeper interest in good live stock in Dufferin County; (2) To introduce into the County a number of good pure-

bred Shorthorn cattle at cost and on easy terms of payment; (3) To give the members some training in the care and management of live stock; (4) To create, if possible, a greater interest in farm work generally.

3. Membership in the Club is open to boys and girls of Dufferin County between the ages of 14 and 22 years, who will agree to the rules and regulations of the Club.

4. The Club shall be organized and directed by the Agricultural Representative for Dufferin County, at Orangeville, and the money will be advanced by the Sterling Bank, Orangeville, Ont.

5. A pure-bred Shorthorn heifer will be supplied to each member. It is intended to purchase heifers 20 to 24 months old and safe in calf. Only animals of approved type and individuality will be selected. The heifer will be registered in the name of the member and all progeny will become the property of the member.

6. Members will be required to pay for these heifers by giving, at time of delivery, a note for the amount for twelve months, endorsed to the satisfaction of the manager of the Bank, and bearing interest at the rate of 6 per cent per annum.

7. Members will be expected to feed and care for the heifer and her calf when born and to furnish a record to the Department of Agriculture on forms which will be supplied.

8. The Department of Agriculture reserves the right to limit the membership or make any additional rules that may be necessary.

9. The heifers will be delivered at a point and date to be decided upon, but not later than May 15, 1919. Members will be notified as to date of delivery and they will be expected to be on hand on that date. Heifers will be numbered and drawing will take place and the heifer so drawn will become the property of that member.

10. Members will be expected to sign an agreement with the Department of Agriculture that the heifer will be bred to a pure-bred Shorthorn bull.

11. The Department of Agriculture will supply bulletins, etc., relating to the care and management of beef cattle and forms will be supplied on which to keep simple records of feed, etc. These records must be returned to the Department at the end of ten months. It is expected that prizes will be offered for the best kept records and other competitions may be arranged.

12. At time of delivery a charge will be made to cover the premium for an insurance policy for the period of the note for a sum as large as can be secured on the animal.

13. All applications must be made on the official application blanks and must be in the hands of the Department not later than April 15, 1919.

In other Shorthorn Calf Clubs organized heifers from 8-15 months have been distributed to the members. The initial cost in this case was not so great, yet a greater length of time will elapse before any returns are secured.

In some of the Shorthorn and Holstein Calf Clubs, auction sales were held in order that the members might secure money to pay off their notes. The members had the privilege of bidding in their own animals if they wished. An auction sale for club work has its advantages and disadvantages. If the animals turn out satisfactorily, they should be kept in the members' hands. It defeats the very object for which it was organized and hence those now being formed are not considering the question of auction sales at all. There is this point in favor of auction sales and that is that it gives the club a great deal of publicity.

In the Halton County Calf Club, the twenty-seven heifers distributed in February were sold at auction on August 20th. A fair was held previous to the sale at which special prizes were awarded. The calves were divided into three classes according to the price paid for them:—

Class	Range in Cost Price	Number of Entries
1	$215—225	9
2	190—200	9
3	150—190	9

Through the generosity of Messrs. W. F. Eaton, H. C. Cox, Ellesworth Flavelle, and Sir Frank Baillie each of whom gave $50 towards the prize list, very substantial prizes were given at the show in each class as follows:—

First, $12; second, $10; third, $8; fourth, $6, and all others in each class, $5.

In addition, two special prizes were awarded: One of $10 by the Calf Club for the animal in best show condition and the other a silver cup presented by the General Animals Insurance Co. for the calf showing the greatest spread between cost price and selling price. The receipts for the sale for the twenty-seven heifers amounted to $7,760, or an average of $287. The first nine which were purchased from $215 to $225, sold for an average of $350. The second lot costing from $180 to $200 brought an average of $296, and the third lot bought at $160 to $175 averaged $214. Sixteen of the heifers were re-purchased by the boys and girls, five were bought by men in the county and the remaining six were sold to outside buyers. Readers will gather from the foregoing that this sale was very successful.

The Peel County Calf Club held a show and sale on October 14th just one year after the dairy heifers were distributed to the members, when $85 was offered in prize money by public spirited persons, as follows:—

B. H. Bull & Sons, Brampton	$30 00
Gordon S. Gooderham, Clarkson	$30 00
Peel Milk and Cream Producers' Association	$25 00

The show was held in the morning and the sale in the afternoon. The judges made their awards on the following basis:—

1. Records of feed consumed and mild production 25 per cent.
2. Condition of animal 50 per cent.
3. Training and Showing 25 per cent.

Entries in each class were:—

Jerseys	11
Ayrshires	7
Holsteins	20

The Representative arranged to have prizes offered by some of the Agricultural Societies in the county for heifers owned by club members. In all, $59 was offered in this way, distributed as follows:—

	1st	2nd	3rd
Brampton—			
Holstein cow, Pure Bred or Grade	$4 00	3 00	2 00
Ayrshire cow, Grade	4 00	3 00	2 00
Jersey cow, Pure Bred or Grade	4 00	3 00	2 00
Streetsville—			
Holstein cow, Pure Bred or Grade	3 00	2 00	1 00
Jersey cow, Pure Bred or Grade	3 00	2 00	1 00
Bolton—			
Holstein cow, Pure Bred or Grade	3 00	2 00	1 00
Ayrshire cow, Grade	3 00	2 00	1 00
Cooksville—			
Holstein cow, Pure Bred or Grade	4 00	3 00	1 00
			Total $59 00

The following extract is taken from the Representative's report, and may be of interest:—

"One heifer which had cost the member $121.90 including year's interest, sold for $235, netting a profit of $113.10 on the cow alone. The heifer calf was valued at $40, which would more than pay for the cow's feed for the year according to figures submitted in the record. The value of the milk may be added to the profit on the cow to estimate total profit. One member who won the championship on his grade Holstein has received over $30 in prize money this fall. Another member's grade Ayrshire cost her $56.20 and was bought in at $105. She said she would not have let it go at $150. Still another member has actually sold $161.20 worth of milk from his cow since March."

All members in the Peel County Dairy Calf Club had to submit records of feed and milk together with a financial statement showing the profit on their enterprise. The following record is of a pure-bred Jersey which calved October 24, 1918; and which was owned by Master W. G. Dolson of Brampton, age 12:—

FEED RECORD

Month	Hay, Ensilage, Roots, Pasture, etc.				Meal, Grain, etc.				Value of all feed for month
	Kinds	Total lbs. per month	Price	Total value	Kinds	Total lbs. per month	Price	Total value	
Oct....	Ensilage..	90	40cwt.	36c.	Bran, oat chop, Gluten feed	24	2½c.	60c.	96c.
Nov ...	Hay......	75	90 "	67c.	Oil Cake	105	"	2 62	4 33
	Ensilage..	260	40 "	1 04	"				
Dec ...	Hay......	76	90 "	68c.	"	186	"	4 65	7 42
	Ensilage..	372	40 "	1 48					
	Roots	217	17 "	61c.					
Jan....	Hay......	76	90 "	68c.	"	186	"	4 65	7 42
	Ensilage..	372	40 "	1 48					
	Roots	217	17 "	61c.					
Feb ...	Hay......	70	90 "	63	"	168	"	4 20	6 17
	Ensilage..	336	40 "	1 34					
Mar ...	Hay......	76	90 "	68	"	186	"	4 65	6 81
	Ensilage..	370	40 "	1 48					
Apl ...	Hay......	75	90 "	67	"	180	"	4 50	6 71
	Ensilage..	360	40 "	1 48					
May...	Ensilage..	100	40 "	40	"	124	"	3 10	5 75
	Pasture ..	1 mo.	2 25 "	2 25					
June...	Pasture ..	1 mo.	2 25 "	2 25	"	60	"	1 50	3 75
July...	Pasture ..	1 mo.	2 25 "	2 25	"	62	"	1 55	3 80
Aug...	Pasture ..	1 mo.	2 25 "	2 25	"	98	"	2 45	4 70
Sept ..	Pasture ..	1 mo.	2 25 "	2 25	"	160	"	4 00	6 25
					Total cost of feed for 1 year..				64 07

MILK RECORD

Month	Lbs. of milk	Average per day	Average per cent. fat	Lbs. of fat	Value of fat at 66c. per lb.	Value of skim milk at 50c. per cwt.	Total value
					$ c.	$ c.	$ c.
October.........	43.5	14.4	5	2.1	1 38	17	1 55
November	492.7	16.4	5	24.6	16 23	1 96	18 19
December	527.4	17.1	5	26.3	17 35	2 13	19 48
January	437.2	14.1	6	26.2	17 29	1 68	18 97
February	396.8	14.1	6	23.8	15 70	1 48	17 18
March..........	417.3	13.7	6	25.0	16 50	1 58	18 08
April...........	394.6	13.1	6.2	24.4	16 10	1 50	17 60
May............	402.1	12.9	6.4	25.7	16 96	1 50	18 46
June	354.0	11.8	6.5	23.0	15 18	1 30	16 48
July............	365.8	11.8	6.8	24.6	16 23	1 37	17 60
August	303.6	9.8	7	21.6	14 25	1 10	15 35
September......	255.2	8.5	7.3	18.6	12.27	87	13 14
				Total value of all milk produced			192 08

Example showing how to calculate receipts from one cow's milk for one month:

Suppose cow produces 1200 lbs. milk in a month of 30 days; that the milk tests 3.9 per cent. fat; that price per pound butterfat is 70 cents, and that price of skim milk is 40 cents per cwt.

No. of Lbs. of Fat for One Month=1200x3.9÷100=46.8
Value at 70c. per lb.=46.8x70=$32.76
No. Lbs. Skim Milk=1200-46.8=1153.2
Value at 40c. per cwt.=1153.2x.40÷100=4.61
Value of Fat and Skim Milk=$32.76+$4.61=$37.37.

FINANCIAL REPORT

EXPENSES		RECEIPTS	
Original Cost of Heifer	$125 00	Amount received for cow at sale .	$160 00
Interest on note at 6 per cent.	7 50	Value of calf when born	25 00
Cost of feed for one year	64 07	Value of milk produced	192 08
Total	196 57	Total	377 08

Net profit (less labor) on whole transaction $180.51.

Certified Correct.

October 14th, 1919. W. G. Dolson.

In the Grenville County Holstein Calf Club formed in April, 1919 with a membership of 14—10 boys and 4 girls—some good records have been made. A number of the heifers were entered in the Record of Performance and a statement of milk production of heifers compiled September 18th shows some creditable records:—

Heifer	Price	Best 1 day	Best 7 days	Best 30 days	Best 60 days
No.	$	lbs.	lbs.	lbs.	lbs.
1	175	42	287	1,160	2,196
2	205	44	280	1,200	2,300
3	150	30.5	199	775.7	1,439.2
4	150	30.8	178.4	723.8	1,357.4
5	180	40	266	1,071	2,049
6	250	62.5	385	1,591	3,138
7	150	41	276	1,133	1,996
8	190	41.2	276	1,071	2,131.2
9	220	34	228.5	897.7	1,793.7
10	210	34	239	876	1,474
11	185	42	282.5	1,149.5	2,157
12	170	32	....	....	....
13	150	37	248	1,048	2,049
14	190	47.5	323.7	1,357.2	2,569.5

About $150.00 to $200.00 has been contributed by public spirited persons as prize money in connection with this heifer calf club and the prize money is as follows:—

1. *To member who shows the largest net profit from heifer in 7 months after freshening* (milk and feed records to be kept and samples taken for testing) 1st and 2nd, a two weeks course in Stock and Seed Judging, or Farm Power, or for Girls, Domestic Science, conducted at the Kempville Agricultural School next winter. Rail-

way fare to Kemptville and two weeks board and lodging, and $5.00 in cash. 3rd, $8.00; 4th, $7.00 and $5.00 in cash to each other member who complies with rules and sends in monthly sheets.

2. *Best Calf by October 19th, 1919, showing evidence of best care from birth*:—Bull—1st, $10; 2nd, $8; 3rd, $6; 4th, $4; 5th, $2; 6th, $1. Heifer—1st, $10; 2nd, $8; 3rd, $6; 4th, $4; 5th, $2; 6th, $1.

3. *Grand Championship*—Silver cup donated by the General Animals Insurance Co., Montreal.

4. *To member who has taken greatest interest in Club and who best lives up to his or her agreement as shown by (a) Management and care of heifer and calf. (b) Best kept feed and milk records, businesslike promptness in sending in same.*

The following extract taken from the report submitted by the Representative from Grenville shows how valuable this club work is from the standpoint of improving the live stock in the community:—

"And it is well worthy of mention also that four of the six bull calves are being kept to head grade herds, three of which had never before kept a pure bred sire. All four of these calves are from good heifers, three of them are of King Segis Alcartra Spofford breeding and the other is line bred from Inka Sylvia Beets Posch. One heifer was entered in the Record of Performance test and at seven months after freshening had given 9543 pounds of milk. The whole family has taken a great interest in this heifer and the boy has gotten an experience in care and feeding under test which he might never have gotten had it not been that he joined this Club.

SHEEP CLUBS

There has been only one Sheep Club formed during the past year and that was the Albion Sheep Club in the County of Peel. The regulations of this Club are given herewith:—

1. The name of the Club shall be the Albion Sheep Club, 1919.

2. The objects of the Club shall be:—
   (a) To create a deeper interest among our girls and boys in the business of sheep raising.
   (b) To introduce sheep on farms where none are now kept.
   (c) To bring into Peel some more good pure bred sheep and to distribute them at cost on easy terms of payment.

3. Albion Township farm girls and boys between the ages of 10 and 18 inclusive will be eligible to become members.

4. Two pure bred Shropshire shearling ewes in lamb shall be distributed in December to each member. Members will be notified to call at a central point on a certain date to receive their sheep. Each pair will be marked with price and number and member will draw a number from box and sheep corresponding to that number shall be his or hers subject to rules of Club.

5. Members who wish to do so many pay cash for sheep at time of delivery or member may give a note for 10 months endorsed to the satisfaction of the Imperial Bank by parent or guardian and bearing interest at six per cent.

6. The ewes will be registered in the name of member, and ewes and their progeny shall be sole property of member. Arrangements will be made to assist members with the sale of their surplus stock and with bringing in pure bred sires for use on members' flocks.

7. The Department of Agriculture will supply bulletins, etc., relating to care and management of sheep, and forms on which to keep simple records of feed and wool production. These records should be carefully kept and turned in to the Agricultural Representative before the end of a year after delivery.

8. The sheep shall be selected from good flocks during the latter part of September in order to secure good animals. A flock will be formed at some suitable place for breeding purposes. The ewes will be expected to lamb during April. The Ontario Sheep Breeders' Association will advance funds with which to buy the sheep to be repaid when relivery is made in December.

9. The Club shall be organized and directed by the Agricultural Representative for Peel County located at Brampton.

Particulars of the clubs formed are given in tabulated form:—

County	Name of Club	Date of Organization	Membership	Age of Members	Date of Distribution of Stock	Breed and Age of Stock Distributed	Price
							$
Peel.	Caledon Sheep Club, 1918	Nov., 1918	14	12–18	Dec. 2, 1918	Oxford shearling ewes (in lamb)	50
"	Albion Sheep Club, 1919	Sept., 1919	10	12–20	3rd week in Dec.	Shropshire shearlings (in lamb)	40

In the previous Sheep Club formed in Peel a year ago two Oxford Down ewes in lamb were distributed to each member. Unfortunately, some of the ewes proved not to be in lamb and others lambed unexpectedly in the middle of winter. This proved a hardship to some of the club members though the breeders from whom the ewes had been bought very kindly exchanged those without lambs for two shearling ewes each with a ewe lamb. The fourteen members each with two sheep had twenty-five lambs and after the transfers had been made the average was just over one lamb per ewe.

In an endeavor to avoid the early lamb misfortune of last season, the Representative from Peel organized a breeding flock in connection with the Albion Club. The shearlings were shipped in and flocked with a good pure-bred ram on November 12th, which should result in lambs being born at a time when the weather is more favorable.

LIVE STOCK CLUBS

There are two such clubs formed in the Province, one in Waterloo County and the other in Brant County. They are confined to pure-bred animals, but they differ from the Calf, Pig or Sheep Clubs already mentioned in that all classes of animals are included.

The following detailed information will show the extent of these clubs:—

County	Name of Club	Date of Organization	Membership	Age of Members	Date of Distribution of Stock	Breed and Age of Stock Distributed	Price
							$ c.
Brant.	Brant Co. Boys' and Girls' Pure Bred Live Stock Club	March, 1919	9	14	April, 1919	3 Shorthorns 2 Yorkshire 2 Shropshire	216 60 16 50 50 00
Waterloo.	Waterloo Co. Boys' and Girls' Live Stock Club	May, 1919	18	12–25	Spring 1919	6 Shorthorn heifers 4 Berkshire sows 6 Yorkshire sows 1 Clydesdale filly	175–275 15 00 15 00 ....

The regulations of the Waterloo County Boys' and Girls' Live Stock Club are given herewith and are similar to those for Brant County:—

1. This Club shall be organized and directed by the Waterloo County Board of Agriculture.

2. Those who are eligible for members are Waterloo County boys and girls between the ages of 12 and 25 years of age.

3. Boys and girls may apply for one female of not more than two classes of Live Stock mentioned above, except Sheep where they can apply for two females.

4. Boys and girls are advised to select breeds of animals kept on the home farm or at least breeds that predominate in their section so that there may be no difficulty in securing good sires.

5. A written guarantee must be given that all females will be bred to a registered male of the same breed.

6. Where parents are already breeders of purebred stock they may encourage their children by giving them an animal and reporting the same to the Agricultural Representative, Department of Agriculture, Galt, and having the animal registered in the child's name.

7. It is to be clearly understood that the animal and her progeny shall be the sole property of and shall be managed by the boy or girl with the advice of the parent.

8. Purchasers will be required to pay cash. If credit is required they are advised to consult with their local banker who will have a knowledge of this scheme. Practically all the Banks of the County will lend money at 6% for this purpose.

9. Practical Waterloo County Farmers who are expert stockmen will be appointed to buy these animals. These men will be beeders of the kind of animals they are appointed to buy.

10. Those under 15 years of age are advised to select sheep or pigs. By good management in two years' time, these animals should give enough profit to buy a heifer.

11. Each member's name will be put on a special mailing list of the Department of Agriculture to receive circulars and bulletins on the care of the particular class of Live Stock they are interested in.

12. An effort will be made to have special classes for these animals at School Fairs and Fall Fairs.

13. An entrance fee of Fifty cents per member will be charged to pay the cost of buying these animals.

14. Applications for the same must be made to the Agricultural Representative, Department of Agriculture, Galt, by May 31, 1919.

15. The method of distribution will depend on the number of applications received for animals. Some plan will be worked out which will be fair to all the members.

EXPERIMENTAL AND DEMONSTRATION WORK

Potato Demonstrations.—The potato demonstrations carried on last year in each county in Old Ontario to show the relative merits of seed from Northern Ontario, Old Ontario and the Maritime Provinces were continued during the past season. The regulations which were issued to the Agricultural Representatives in connection with these demonstrations are as follows:—

Practically all plots both in Old and New Ontario were visited and inspected for disease by the staff of the Botanical Department of the Ontario Agricultural College at Guelph. When the potatoes were harvested accurate yields were obtained from each plot by the Agricultural Representatives, particulars of which are given in the following tables:—

Results:

Showing the percentage of Leaf Roll, Mosaic and the yield in bushels per acre of the demonstration plots from Northern Ontario, Old Ontario and New Brunswick.

TABLE I.—IRISH COBBLER

County	Northern Ontario			Old Ontario			New Brunswick		
	Leaf Roll	Mosaic	Yield	Leaf Roll	Mosaic	Yield	Leaf Roll	Mosaic	Yield
			bus.			bus.			bus.
Algoma	0	0.2	56	0.7	1	130.5	0.2	0.5	118.5
Brant	0	0	171.8	0	0	159.7	0.5	0	171.8
Durham	0	0	218.8	0.7	0	169.7	0	0	170.5
Elgin	0	0	63	0.5	0.5	51.8	0.2	0.1	40.8
Frontenac	0	0	53.6	0.5	0.5	93.6	0	0	88
Grey	0	0	76	1.5	0	32	0	0	47
Hastings	0	0	108	1.5	0	72	0	0	80
Halton	0	1.5	260.1	4	1.5	223.2	1	2	181.5
Huron	0	0.5	181.6	2	0	164.8	0	1	124.2
Lambton	0	0	43.7	1.5	0	33.5	0.5	0	28.6
Lincoln	0	0	90	2	0	75	0	0	25
Manitoulin	0	0.2	132.5	1	0.5	74	0.7	0.5	146
Middlesex	0	0	51.3	0.2	0	52.6	0.2	0	82.3
Muskoka	0	0	128	2.7	0.7	110.5	2.2	0	112.2
Ontario	0	0	397.5	1	0	331.7	0	0	234.5
Peel	0	0	99	1	0	110	0	0	89.8
Peterboro	0	0	117	0.5	0	134.5	0	0	155.6
Sudbury	0	1	273	0.7	1.2	279	0.5	0.2	246
Thunder Bay	0	26	258.5	1	19	223.5	0	13	205.7
Victoria	0	0	122.1	1	0	106.1	0	0	80
Waterloo	9	4	59.1	13	0.5	46.5	12	3.5	33.7
Welland	0	0	59.7	2	0	85.3	0	0	54.1
Wellington	5	1	130	5	3	136	4	4	121
Wentworth	0	0	62.5	1.5	0	56	0	0	50

TABLE II.—GREEN MOUNTAIN

County	Northern Ontario			Old Ontario			New Brunswick		
	Leaf Roll	Mosaic	Yield	Leaf Roll	Mosaic	Yield	Leaf Roll	Mosaic	Yield
			bus.			bus.			bus.
Algoma	0	0.7	141	0.2	2.7	107	0	1.7	123.5
Brant	0	0	239.5	0.5	0	225	0	0	244.5
Durham	0	0	293	0.5	0	218.8	0	0	187.6
Elgin	0	0	53.5	1	0	71	0	0	54.7
Frontenac	0	0	158	1	0.5	93.6	0	0	90.6
Grey	0	0	144	1.5	0	97	0	0	133
Hastings	3	0	95	0	0	60	0	0	104
Halton	0	0	298.4	2.5	0.5	317.6	0	0.7	274.2
Huron	0.5	0	223.1	3	0.5	256.8	0	0	235.2
Lambton	0	0	65.3	0.5	0	147.7	0.5	0	86.5
Lincoln	0	0	100	3	0	95	0	0	125
Manitoulin	0	0.5	309	0.5	3.7	278.5	0.7	2.2	342.5
Middlesex	0	0	65.2	0	0	89	0	0	115.1
Muskoka	0	0	126	2	0	109.7	0.5	0	115.2
Ontario	0	0	520.5	1	0	526.2	0	0	526.2
Peel	0	0	148.5	0	1	187	0	0	137.5
Peterboro	0	0	88.3	2	0	130.7	0	0	161.3
Sudbury	0	4.2	327.5	0.2	11.5	331.5	0	2.2	326
Thunder Bay	0	12	192.8	1.5	42	196.5	0	36	191.2
Victoria	0	0	141.6	0.5	0	128	0	0	130.1
Waterloo	6.5	13.5	45.8	8.5	12	114.3	7	11	47.2
Welland	0	0	135.2	1	0	133	0	0	131.2
Wellington	0	5	96	1	10	131	3	0	150
Wentworth	0	0	96	1	0	84	0	0	80.5

The average yield of marketable potatoes of all plots calculated in bushels per acre together with percentage of leaf roll and mosaic.

TABLE III.

	Irish Cobbler			Green Mountain		
—	Leaf Roll	Mosaic	Yield	Leaf Roll	Mosaic	Yield
			bus.			bus.
Northern Ontario..................	0.5	1.4	130.4	0.4	1.3	163.7
Old Ontario........................	1.2	1.1	122.8	1.2	3.5	171.7
New Brunswick....................	0.8	1.0	110.0	0.4	2.2	171.3

Comparative yields in bushels per acre of similar seed on clay or heavy soils and sand or light soils:—

TABLE IV.—IRISH COBBLER

County	Clay			Sand		
	Old Ontario	Northern Ontario	New Brunswick	Old Ontario	Northern Ontario	New Brunswick
	bushels	bushels	bushels	bushels	bushels	bushels
Algoma	213	56	183	48	56	54
Brant	....	....	....	159.7	171.8	171.8
Durham	147.4	197.6	156	192	240	185
Elgin.......................	59.5	72.6	44.3	44.2	53.5	37.3
Frontenac	93.6	53.6	88	....	....	....
Grey	....	....	....	32	76	47
Hastings	72	108	80	....	....	....
Halton	223.2	260.1	181.5	....	....	....
Huron	260	247	171	69.7	116.2	77.5
Lambton	36.1	49.0	26.2	31	38.4	31.0
Lincoln....................	....	....	....	75	90	25
Manitoulin...............	96	146	167	52	117	125
Middlesex	67.2	62.1	58.5	38	40.5	106.2
Muskoka	110.5	128	112.2	....	....	....
Ontario....................	....	....	....	331.7	397.5	234.5
Peel.........................	110	99	89.8	....	....	....
Peterboro.................	134.5	117	155.6	....	....	....
Sudbury..................	254	247	267	304	299	225
Thunder Bay	137.8	204	149.3	309.3	313.1	262.1
Victoria	106.1	122.1	80	....	....	....
Waterloo	55.4	51.2	28	37.6	67	39.4
Welland	....	....	....	85.3	59.7	54.1
Wellington	....	....	....	136	130	121
Wentworth	47	50	45	65	75	55

TABLE V.—GREEN MOUNTAIN

County	Clay			Sand		
	Old Ontario	Northern Ontario	New Brunswick	Old Ontario	Northern Ontario	New Brunswick
	bushels	bushels	bushels	bushels	bushels	bushels
Algoma	154	174	193	60	108	54
Brant	....	....	....	225	239.5	244.5
Durham	277.6	360	239	160	226	136.3
Elgin	63.5	32.5	57.2	78.5	74.6	52.2
Frontenac	93.6	158	90.6	....	....	....
Grey	....	....	....	97	144	133
Hastings	60	95	104	....	....	....
Halton	317.6	298.4	274.2	....	....	....
Huron	320	299	269	193.7	147.2	201.5
Lambton	63.8	38.1	61.2	131.6	92.6	111.8
Lincoln	....	....	....	95	100	125
Manitoulin	392	458	500	165	160	185
Middlesex	83	95	97	95	36.2	133.2
Muskoka	109.7	126	115.2	....	....	....
Ontario	....	....	....	526.2	520.5	526.2
Peel	187	148.5	137.5	....	....	....
Peterboro	130.7	88.3	161.3	....	....	....
Sudbury	286	258	330	377	397	322
Thunder Bay	185.8	180	132.5	207.3	205.6	250
Victoria	128	141.6	130.1	....	....	....
Waterloo	73.3	56	46.6	41	35.7	48.8
Welland	....	....	....	133	135.2	131.2
Wellington	....	....	....	131	96	150
Wentworth	48	52	46	120	140	115

Comparative yields in terms of marketable bushels per acre with both Irish Cobblers and Green Mountains on clay and sand.

TABLE VI.

—	Irish Cobbler		Green Mountain	
	Clay	Sand	Clay	Sand
Northern Ontario	126.1	137.6	171.0	168.1
Old Ontario	123.5	118.3	165.2	166.8
New Brunswick	106.5	108.8	165.8	171.6
Average	118.7	121.6	167.3	186.8

These figures bring out the same result as last year, namely, that larger yields were secured on sand than on clay soils.

TABLE VII.—Comparison of General Yields by Varieties

Source	Green Mountain	Irish Cobbler
Northern Ontario	169.5	131.8
Old Ontario	166.0	120.4
New Brunswick	168.7	107.6
General Average	168.1	119.9

Owing to the most unfavorable weather conditions in several counties a number of the demonstrations were in part ruined and in other cases the figures as given are misleading. For these reasons the average as given this year must not be accepted as representative of the seed from the various sources in a good season.

CORN VARIETY TESTS

In co-operation with the Corn Specialist the Agricultural Representatives have been carrying on some experimental work in testing varieties of corn for silage. First class seed corn was obtained from the corn growers in the corn belt in the south-western portion of the Province.

The regulations as issued are as follows:—

There should be two tests in each County:—
One on light soil and the other on heavy soil, or one test on each of the two main types of soil in the County.

Varieties used:—
Dents—Bailey, Golden Glow, White Cap Yellow Dent, Wisconsin No. 7.
Flints—Longfellow, Salzer's North Dakota.

Plot Arrangement
There will be six plots, one variety to be planted in each plot.
Plant the varieties in the alphabetical order here indicated:—

Plot 1 Bailey
2 Golden Glow
3 White Cap Yellow Dent
4 Wisconsin No. 7
5 Longfellow
6 Salzer's North Dakota

Aim to select soil of average quality, well drained and uniform throughout.

Size of Plots:—
Each plot to have 4 rows, each row to be 4 rods long and the rows 42 inches apart.
The hills of corn are to be 42 inches apart in the row, making 72 hills per plot.
Plant six kernels to a hill and thin to four when the corn is not more than 6 inches high.

CULTIVATION SUGGESTIONS:—

Harrow all corn with a spike-tooth harrow or something similar after planting and before the corn is above the ground. Harrow again once or twice, when the corn is 2 inches or 3 inches high. This kills all weeds in the hill. Harrowing can best be done on warm days between 10.30 a.m. and 3.30 p.m. without injury to the plants. Never harrow if the soil is wet or the corn covers badly. Cultivate as soon as the rows can be seen. The first cultivation should be *deep* and *close* to the row. Other cultivations should be shallow—2 inches to 3 inches at the most. Do not cultivate *deep* and *close* to the row after the corn is 30 inches high. It reduces the yield in most cases, and invariably retards maturity. Never use cultivator after the corn begins to tassel. Flat teeth should be used on the cultivator after the first two cultivations, so that the corn roots will not be injured.

HARVESTING:—

Select sheaf consisting of 12 stalks, approximately one foot in diameter from each plot, weigh at cutting time to get the green weight, then lay it away in a shed or barn to dry and weigh again at the end of two weeks. This would give the total shrinkage.

During the summer months the Agricultural Representative inspected the plots and took notes as to type of soil, uniformity of stand and state of maturity when cut. They also noted the average height of ears on the stalks, the character of the leaf and height of ears from the ground; these are variety and selection characteristics and perhaps have more to do with plant breeding work than ensilage. After the corn was cut, the green weight in tons per acre was calculated, after which a certain number of stalks were allowed to stand for a couple of weeks in order that the dry weight might be obtained. From these figures the percentage of loss or shrinkage was obtained.

There were to be two tests conducted in each county, but unfortunately, in very few counties can the results be used. The failures were due to a combination of circumstances such as dry weather, poor stand, plots destroyed by animals, etc. Where two reports were received from one county the average results are given:—

TABULATED RESULTS OF CORN VARIETY TESTS SHOWING THE GREEN WEIGHT AND DRY WEIGHT IN TONS PER ACRE

County	Wisconsin No. 7		Bailey		Golden Glow		White Cap Yellow Dent		Salver's North Dakota		Longfellow	
	Green	Dry	Green	Dry	Green	Dry	Green	Dry	Green	Dry	Green	Dry
Bruce	12.55	4.44	13.89	4.88	17.11	5.77	13.22	4.66	11.22	3.8	10.22	3.35
Carleton	13	7.9	12.8	7.5	12	7	11.7	6.8	12.2	7.3	10.2	6.5
Elgin.......	10.9	7	8.88	5.9	8.2	5.9	8.88	6.51	7.4	5	8.5	6.51
Frontenac ..	15	8.4	13.4	8.3	14.5	8.5	13.4	8	10.6	6.5	7.5	4.7
Grenville ...	21.9	12.5	15.5	7.9	20.4	11.9	19.07	11.9	15.5	9.31	18.6	8.87
Glengarry ..	19.9	16.2	18.6	15.2	19.4	14.4	20.3	14.8	20.3	15.2	18.6	14.4
Lambton....	8.8	8.6	8.8	7.6	7.6	6.2	8.6	8.2	8.2	6.6	8	8
Lanark	9.61	3.09	9.4	3.09	10.68	3.41	9.18	2.56	10.04	2.77	10.25	2.99
Middlesex...	18.3	15.2	20.4	17.3	15	14.5	16.4	14.8	15.1	14.1	8	7.6
Simcoe	26.6	16.4	22.1	13.3	17.5	10.6	19.9	10.6	21.3	13.7	23.2	14.2
Victoria	19.01	5.88	16.25	5.88	15.44	5.88	15.56	6.57	12.79	5.36	13.83	5.7
Waterloo....	8.08	4.72	7.28	4.1	7.41	3.75	5.98	3.22	5.75	3.55	6.99	4.68
Average.	15.3	9.19	13.95	7.58	13.77	9.64	13.51	8.21	12.53	7.76	11.99	7.29

PRACTICAL DEMONSTRATIONS

For a number of years Representatives have made a practice of conducting as many practical demonstrations on farms in their respective counties as possible. In addition to the special work carried out with potatoes and corn, demonstrations have been conducted to show the results of using a hardy strain of alfalfa seed in comparison with the common variety; to test the relative merits of home grown versus foreign grown root seed; to prove the value of treating grain for smut, potatoes for scab and other fungus disease; to show the effects of lime and fertilizers on special soils and crops; to show the effect of dusting cherry trees for the control of pear and cherry slugs; to show the proper method of spraying apple orchards to control insect pests; scab and other fungus diseases; to show how to detect foul brood and "clean" up a colony of bees.

Demonstrations have also been given in the poultry yards showing the proper methods of selecting the layers from the non-layers. Requests for these culling demonstrations reach the Representative's office quite frequently. In fact, one Representative reported culling fifty-four flocks of poultry, comprising about 5,000 birds last fall. In one instance, a Representative selected twenty-five of the best birds of a flock and twenty-five of the poorest birds. These were kept in separate pens, fed in the same manner and records kept for one month with the result that the best pen of twenty-five birds were laying as high as nineteen eggs a day and later laid as many as twenty-four eggs a day. The twenty-five birds which were ranked as "culls" laid only two eggs during the same period. These birds were afterwards sent to market. Such demonstrations as above mentioned are very practical, mean dollars and cents to the farmers and will result in a more prosperous community with better living conditions.

DRAINAGE SURVEYS AND DEMONSTRATIONS

As has been mentioned in previous reports the Agricultural Representatives are equipped with instruments for taking levels and are called upon quite frequently to make drainage surveys for farmers. Details of drainage surveys and profiles made for the farmers by the Agricultural Representatives are given herewith:—

County	No. of Surveys made	Acreage surveyed	No. of profiles made
Brant	17	90	17
Bruce	8	150	....
Carleton	37	100	35
Dufferin	2	700	1
Dundas	2	45	2
Elgin	52	550	63
Essex	12	115	8
Frontenac	2	....	1
Grenville	7	....	....
Glengarry	7	100	7
Grey	2	250	1
Haldimand	1	....	2
Hastings	13	....	....
Huron	4	50	....
Kent	1	40	....
Lambton	14	1,450	14
Leeds	8	....	....
Lennox and Addington	....	....	2
Lincoln	33	858	45
Middlesex	17	....	16
Norfolk	1	3	....
Oxford	4	....	4
Peel	5	....	2
Peterborough	7	86	11
Prince Edward	3	130	....
Renfrew	3	....	....
Simcoe	4	150	....
Victoria	....	60	21
York	8	550	4
Total	278	5,477	256

This does not represent the amount of drainage work done throughout the Province as by far the major portion of the work is done through the Drainage Department of the Agricultural College and their field men stationed in various counties.

LIVE STOCK BREEDERS' CLUBS

Organization seems to be the order of the day. Farmers interested in pure bred live stock are receiving encouragement and assistance from the Agricultural Representatives in the organization of Live Stock Breeders' Clubs with the main object of advancing the interests of their particular breed of live stock. The Horse Breeders' Clubs have been organized with the express purpose of taking advantage of the Federal assistance to horse breeders. The Holstein, Ayrshire and Shorthorn Breeders' Clubs arrange and hold consignment sales as a result of which scores of herds of pure-bred cattle are found in the Province where grades were kept previously.

The following Breeders' Clubs were organized last year:—

Bruce:—Brant Township Horse Breeders' Club.
Carleton:—Carleton County Shorthorn Breeders' Club.
Leeds:—Brockville District Clydesdale Breeders' Club.
Renfrew:—Beachburg Horse Breeders' Club.
Wentworth:—Wentworth District Holstein Breeders' Club.
Wentworth Shorthorn Association.

WORK WITH FALL FAIRS

Considerable interest is being created at the Fall Fairs amongst the Junior Exhibitors. Since the advent of the School Fair the majority of the Fall Fair Boards have a special prize list for the Junior classes. This section of the fair is usually placed in charge of the Agricultural Representative. In many cases Live Stock Judging Competitions are conducted for young men by the Agricultural Representative, the Agricultural Society offering special prizes for this feature. Educational exhibits are also prepared and staged through the local offices.

BACKYARD PIGS

During the war quite an interest was worked up over the keeping of pigs in backyard lots. The Representative from Grenville County reports as follows:—

"In order to corroborate my experience of the year previous in connection with the keeping of pigs in village back yards which I had cultivated in war time, as a means toward encouraging thrift, and increasing production, I again bought two six weeks old Yorkshire pigs. I am submitting herewith a complete statement of outlay and receipts in connection with these pigs which is interesting and again shows plainly that Backyard Pigs can be kept with considerable profit. In fact the results are very similar to those obtained the year before. I again considered myself fortunate in being allowed to choose my two pigs from a litter, and was fortunate also in being able to get some skim milk for the pigs while very young from a neighbor who had a cow. In addition to the feeds mentioned in the statement, weeds and thinnings from the garden were fed, and also kitchen refuse, for which no charge is made.

Expenditures and Receipts in connection with keeping two pigs in a village backyard:—

April 21	2 pigs 6 weeks of age @ $8.00	$16 00	
	300 lbs. skim milk @ 50c. cwt.		1 50
22	100 lbs. special middlings	2 75	
	100 lbs. feed flour	3 60	
	200 lbs. corn oil cake @ $2.90	5 80	
May 15	2½ bus. oats @ 90c.	2 25	
	100 lbs. special middlings	2 90	
	150 lbs. barley, corn and peas (equal parts) @ $3.00	4 50	
	Grinding	25	
	100 lbs. barley meal	3 25	
	100 lbs. equal mixture of rye, barley, corn, flour and shorts	3 50	
	50 lbs. Samson	1 50	
Aug. 21	Carting to stock yard	1 50	
	Total cost	$49 30	
	2 pigs weighing 395 lbs. @ $21.50 per cwt.		$84 90
	Profit		$35 60

In my last report the cost of production was given as $36.55 for two pigs and the profit $28.05 on the transaction."

SPECIAL CONTESTS IN CARLETON AND RUSSELL COUNTIES

The Boys' Potato Growing Contest for the Counties of Carleton and Russell were conducted on much the same basis as those reported last year. There were twenty-two entries all told and all prize money and other expenses came from an Endowment Fund from the estate of the late R. B. White, of Ottawa. In addition to the cash prizes and medals, the winner in each contest—Carleton and Russell—receives a scholarship of $25 to apply on a course at the Kemptville Agricultural School. The competitors, ranging in age from 12-18 years were required to operate one-tenth of an acre, keep accurate records of all operations and expenditures, prepare a report and embody in such report a certified statement of the yield and also to exhibit one bushel of potatoes at the County Fair. The yields last year were as follows: Carleton County, 267 bus. per acre; Russell County, 185 bus. per acre, and the average profit per acre for both the Carleton and Russell contests was $37.43. It is a significant fact that all competitors grew either the Green Mountain or Irish Cobbler variety of potatoes. The Agricultural Representative inspected all plots and had general supervision of the competition.

The Girls Gardening and Canning Competition was also inaugurated by the late R. B. White, of Ottawa, and it is financed from an Endowment Fund from his estate. Last year, twenty-three girls took part in the contest. They were required to keep accurate records of their work during the season and submit a report after the garden stuff was harvested. They were also expected to make an exhibit of canned and fresh vegetables at the County Fair. One important feature of this contest is the result which competitors are receiving from the Herbert raspberry plants which are supplied to each competitor when they enter. One contestant during the past season picked seventy quarts of berries from her forty plants.

Both the Boys' Potato Growing Contest and the Girls' Gardening and Canning Competition have done much to stimulate an interest in the growing of potatoes and vegetables amongst the farmers in the community, where its influence might be felt.

SCRUB BULL CAMPAIGN

With the idea of launching a campaign for the elimination of the scrub and grade bulls of the Province, the Agricultural Representatives were charged with the task of securing a bull census of their respective counties during the months of June and July last. The plan suggested to gather the information was somewhat as follows: Fifteen or twenty farmers were selected in each township as a preliminary step in compiling the census. These farmers were sent a letter explaining the campaign together with a blank form asking them to give the names and addresses of farmers owning registered bulls, together with breed and grade bulls, together with their breeding and return the same to the Agricultural Representative's office within ten days. From these reports a list of farmers owning pure bred and grade bulls were compiled and sent to every owner of bulls on the list with a request that they fill in the names of all other owners of bulls not on the list, make any necessary corrections and return promptly. A corrected list of owners of bulls was then prepared and sent out again with a request for still further additions and corrections. School teachers, junior farmers, pure-bred breeders and others co-operated with the Representatives to make the census as complete as possible. In the dairy districts the owner or operator of the cheese factories assisted in compiling statistics.

The statement of the bull census which follows is by no means complete. While the owner of a pure-bred bull would be anxious to have his name enrolled amongst those possessing registered males, the owner of a scrub or grade bull would not like to have it known that he possessed such an animal and invariably would not report. Moreover, perhaps his neighbor who might be asked to co-operate in the gathering of such information, would be diffident about reporting. Hence the percentage of grade bulls as given is low.

Those in close touch with the live stock situation in the Province have estimated the number of bulls in the Province at 50,000 or thereabouts, whereas the actual number of farmers keeping bulls as reported in the census is 21,429. The number of pure-bred bulls is 12,301, and grade bulls 10,171, which means that 45.2 per cent. of the bulls as reported are grades. This is truly an alarming state of affairs and calls for some definite action being taken to eliminate the scrub sire from our live stock herds.

In the counties generally recognized as specializing in dairying, the number of farmers reported as keeping bulls are 12,164. These farmers kept 4,810 pure-bred and 7,660 grades for a total of 12,470 bulls, which means that 61.4 per cent. are grade sires.

In counties where beef raising predominates, 9,265 farmers kept bulls, 7,491 of which were pure-bred and 2,511 grade. The percentage of grade bulls as taken from the reports is 25.1, a much better showing than in the dairy sections of the Province.

And while these figures are not absolute owing as previously stated to the owners of bulls both grade and pure-bred not reporting, the likelihood would be when the census is complete that the percentage of grade bulls, both beef and dairy, would be considerably higher than the figures given.

SOLDIER SETTLEMENT WORK

The Agricultural Representatives have rendered a great service to the returned soldiers who have and are taking up land under the Soldier Settlement Board of the Dominion Government. Such service consists in giving helpful information to the soldier settler when he seeks an interview with the Representative in his office, and in visiting the settlers on their farms and helping them to solve their problems. In addition to such service rendered in this manner the Representatives are called upon to assist the Soldier Settlement Board in establishing a settler on the land. Preliminary information forms, confidential reports, farm description forms and loan forms have to be filled in concerning each soldier who is making application for a loan through the Board. This entails a great amount of detail work for the Representatives, and during certain seasons of the year practically half the time spent in their offices was devoted to this work.

During the year, 6,326 applicants interviewed the Representatives regarding information concerning the settling of soldiers on the land; 1,564 Preliminary and Farm Description forms were filled out and sent to the Soldier Settlement Board, Toronto; 1,978 Confidential Reports were submitted to the Board; 1,052 Applications for Loan Forms were filled out; 523 applicants in training were visited and reported on and 228 established settlers were visited and given helpful information.

CO-OPERATION AND MARKETS BRANCH

This Branch inspects incorporation of co-operative companies in connection with the Provincial Secretary's Department, under Part IIa of The Ontario Companies Act. Inquiry is made as to the origin and nature of proposed incorporations and inspection of by-laws in order to determine, in each case, whether the incorporation is of a co-operative nature or not. During 1919, fifty-six co-operative organizations have been incorporated under the Act. This number does not include the incorporations in Ontario under Part IIa of the Act of co-operative stores, etc., as organized in connection with the Co-operative Union of Canada.

The Act provides for the prevention of the use of the word "co-operative" among non co-operative organizations, and in many instances visits have been made to the proposed organization in this connection.

The Branch has assisted and advised, in connection with the organization, many of these incorporated organizations.

Assisted and advised incorporated organizations desiring to amalgamate or to change so as to strengthen their system of organization.

Assisted some few organizations in introducing a simple set of books advised for the business of small co-operative organizations.

Inspected and reported upon for the Loan Commission four applications for loans to organizations in Northern Ontario.

Endeavored to gather general statistics regarding co-operative endeavor in the Province.

Addressed meetings of farmers, Farmers' Clubs, Short Courses, etc., in the interests of co-operation at Watford, Petrolia, Trenton, Renfrew, Brantford, Port Arthur, Murillo, Dorion, Sudbury, Blenheim, Ridgetown, Belleville, Napanee, Rydal Bank, Warren, St. Charles, Grimsby, Norwich, Simcoe, Kenora, Perth, etc., also at Experimental Union, Guelph, and Corn Show at Chatham, etc.

Acted for the Organization of Resources Committee in connection with Prof. Leitch's Standard Feed plan in purchase, storage, and re-sale of 6,795 tons of oil cake meal and 5,500 tons of cotton seed meal, valued at $775,000.

Continued propagation of co-operative live stock shipping. Visited about one hundred clubs in Western Ontario, many of them a number of times, giving advice and assistance on initial shipments. Assisted in the organization of twelve live stock shipping organizations, made up of from two to six Farmers' Clubs each. Repeatedly visited points such as: Owen Sound, Clinton, Orangeville, Arthur, Dundalk, Lambton Co., etc., in the interests of amalgamating shipments through those clubs already shipping.

During the year Circular No. 15 with regard to live stock shipping was issued. The records as recommended in this circular are in use in an unknown number of clubs; some four or five have directly assisted in inaugurating the system.

During the summer this Branch has made a special study of motor transportation in Ontario. This study has covered the experience and application of motor trucking in Ontario as applied to fruit growers, vegetable growers, milk and cream producers, beekeepers, and general farm. The study of conditions in sections of the Province where inter-urban traffic is comparatively heavy. The cost of operating various sizes of motors and of the factors determining such a cost. The relation of the condition of roads and the size and kind of truck The importance of a return load and the use of trailers. The use of the truck in competition with steam roads, horse drawn vehicles, etc. The advantage and disadvantage of co-operative and privately owned motor trucks. A study of the factors which farmers or farmers' organizations should consider when purchasing a motor truck.

A study was also commenced on the question of grading farm products as found on the city markets and in connection with the marketing of a few co-operative associations.

Observations were made of the conditions obtaining to some fifteen city markets in Ontario, including the system at the Humber and Toronto, in connection with vegetable garden marketing in that section.

MONTEITH DEMONSTRATION FARM

In a threefold manner this institution has served the district during the year—demonstrating cropping systems and live stock practice, distributing pure-bred stock, and as an educational centre.

In the latter connection three events of special interest took place. Commencing on April 7th, a four weeks' short course was conducted for boys, and upwards of twenty boys lived in residence and attended lectures and demonstrations on field crops and live stock with beneficial results. Commencing on July 21st, a course was started for girls and about a dozen attended for one month, taking lectures in cooking, sewing, home nursing and hygiene. In August, the demonstration day, discontinued on account of the war, was resumed and upwards of 2,000 farmers and others visited the farm and enjoyed a day of social and educational profit.

FIELD CROP RESULTS

Twenty acres of new land were cleared during the year, stumping powder being found very efficient in the work. Results secured with various field crops may be summarized as follows:

Sixty-five acres of hay yielded at the rate of one and one-quarter tons per acre, excellent quality. For seeding down the following mixture is recommended: red clover, seven pounds, alsike, four pounds, timothy, four pounds.

In oats, O.A.C. No. 3 is giving the best results under northern conditions. It yielded forty bushels to the acre.

Barley, the surest crop in north, variety O.A.C. 21, yielded thirty bushels to the acre.

For ensilage, oats, peas and common vetch (oats two and a half bushels per acre, peas three quarters, vetch one-third) has proven itself. Next year sunflowers which have attracted much attention in the west will be tried out.

The potatoes sown under field conditions were mainly of Irish Cobbler variety, whole seed being used and a well drained sandy loam soil utilized. Yield, 300 bushels per acre. A few beetles appeared indicating that they are gradually invading the north country.

Turnips—Jumbo Swede and selected Purple Top Swede—on heavy clay soil, well cultivated and well manured, yielded 800 bushels to the acre.

In the matter of cultivation for field crops generally, experience has proven that deep fall plowing on heavy clay soils is essential for best results.

PLOT WORK

The following Table gives details *re* all Plots:—

Plot	Date seeded	Date harvested	Yield per acre.		Remarks
			Marketable	Unmarketable	
			bus.	bus.	
Potatoes; Green Mountain, cut seed.	May 31st	Oct. 3rd	396	6⅔	New Ontario seed practically free from disease.
Potatoes; Green Mountain, whole seed.	"	"	414⅔	9⅓	Same seed as above. Note increase in yield from whole seed.
Potatoes; Irish Cobbler, cut seed.	"	"	394⅔	6⅔	New Ontario seed. Free from disease.
Potatoes; Irish Cobbler, whole seed.	"	"	453⅓	4	Same seed as above. Note extra heavy yield.
Potatoes; Early Ohio, cut seed.	"	"	273½	8	Good keepers, good quality.
Potatoes; Early Triumph, cut seed.	"	"	329⅓	12	A new variety, tested for first time.
Potatoes; Early Rose, cut seed.	June 3rd	Oct. 4th	253½	8	Local grown seed. This variety has given good results in New Ontario.
Table Beets; Dandy Egyptian.	May 30th	"	960	....	Beets were of excellent quality.
Mangels; Yellow Globe.	"	"	800	....	First year such results have been obtained.
Mangels; Yellow Leviathan.	"	"	920	....	Result considered very good for this year.

PLOT WORK—continued

Plot	Date seeded	Date harvested	Yield per acre	Remarks
Turnips; Jumbo Swede.	May 30th	October 4th	bus. 840	This variety has always given good results on the farm.
Turnips; Purple Top Swede.	"	"	920	A smoother and more uniform turnip than the Jumbo.
Turnips; fall, Purple Top Greystone.	"	"	1,480	Recommended for early fall feeding.
Rape.	"	....	....	Grew well.
White field carrots.	"	"	706⅔	A fine sample, large and uniform.
Silage; mammoth Russian sunflowers.	"	Sept. 27th	tons 30	To be tested under field conditions next year.
Silage; oats. peas, sunflowers and grass seed.	"	"	14⅔	Sunflowers do better sown alone.
Silage; oats, peas and corn.	"	"	4⅛	Not to be recommended.
Silage; oats, peas, rye and grass seed.	"	"	4½	Rye not desirable in a mixture.
Silage; oats, peas. vetch and grass seed.	"	"	5½	Our standard ensilage mixture.
Silage; common vetch.	"	"	9½	Better in a mixture.
Oats; O.A.C., No. 3.	May 28th	August 11th	Estimated yields, bus. 50	Ripe in 75 days.
Oats; Daubenay.	"	August 6th	45	Ripe in 70 days.
Oats; Yellow Russian.	"	August 25th	50	Ripe in 90 days.
Oats; Abundance.	"	"	50	Ripe in 90 days.
Oats; O.A.C., No. 72.	May 30th	August 27th	50	Ripe in 92 days.
Ruby Spring Wheat.	May 27th	August 5th	50	Ripe in 70 days.
Red Bobs Spring Wheat.	"	August 15th	20	Ripe in 80 days.
Marquis Spring Wheat.	May 28th	August 20th	25	Ripe in 85 days.
Goose Wheat.	"	Frozen	....	Too late a variety.
Arthur Peas.	May 31st	Partly mature when frozen	....	Seeded too late.
Early Britain Peas.	"	Did not mature	....	Recommended for ensilage use.
Russian Blue Peas.	May 29th	Sept. 4th	15	Ripe in 98 days.
Canadian Beauty Peas.	"	Partly mature when frozen	....	Recommended for ensilage mixture.

PLOT WORK—continued

Plot	Date seeded	Date harvested	Yield per acre	Remarks
			Estimated yields, bus.	
White Eyed Marrowfat Peas.	May 29th	Partly mature when frozen	....	Recommended for ensilage mixture.
Sippinaw Peas.	"	Sept. 10th	20	Ripe in 104 days.
O.A.C., No. 21 Barley.	"	August 17th	35	Ripe in 80 days.
Molster Barley.	"	August 15th	30	Not as good as No. 21.
Flax.	"	Partly mature when frozen	....	Seems to mature better when seeded with grain.
Spring Rye.	"	August 27th	18	Grew well.
Rye Buckwheat.	"	Partly mature when frozen	....	Not to be recommended.
Hungarian Millet.	"	....	....	A good hay crop.
Alsike Clover.	May 30th	....	....	Sown alone, and grew to a length of 2½ feet in 96 days.
Timothy.	"	....	....	Do not recommend sowing this crop alone.
Ont. Variegated Alfalfa.	"	....	....	Next year we intend testing Ont. Alfalfa under field conditions. The plot did exceedingly well.
Emmer.	"	Mature. August 28th	....	Mature in 91 days. Not grown much in Ont.

NOTE.—Plots were 1 x 2 rods in size or 1/80 of an acre.

It is seen from the above table that some very interesting and conclusive facts are tabulated. Reference may particularly be made to yields of potatoes from whole seed. Results this year are similar to those of last year. Very little disease was present. Our aim is to build up a strain of pure stock for purpose of distribution throughout the north. The yields obtained from field root crops recommends further work of an experimental nature especially with mangels.

The grain plots did well excepting the peas. They should have been seeded earlier. We attribute early maturing of oats and wheat to the hot summer weather. It cannot be taken as an average for all years.

Sunflowers promise to be a valuable crop for ensilage, further experimental work will be done next year with them.

Alfalfa also did well and next year we plan to experiment with it on a much larger scale.

LIVE STOCK

One of the most important services which the live stock department of the farm can render is the distribution of pure-bred stock among the settlers. During the year the following animals were sold in this way: fourteen rams, twenty-two sows and twenty-one boars, two cows, three heifers and three bulls.

KEMPTVILLE AGRICULTURAL SCHOOL

Considerable progress has been made at the Kemptville Agricultural School during the past year, both on the farm, with the herds and flocks, and in the erection of school buildings.

Thorough cultivation and a short rotation of crops have almost cleaned our farm of noxious weeds, while its productive ability has been greatly increased by applications of barnyard, commercial and green manures.

Tests have been made, under field conditions, of (1) Banner, O.A.C. No. 72 and Alaska oats; (2) Arthur and Canadian Beauty peas; (3) Green Mountain and Irish Cobbler potatoes, with seed secured from Northern and Old Ontario and New Brunswick; (4) Dent and Flint ensilage corn; (5) permanent pastures on land unsuited to a regular rotation of crops; (6) sweet clover as a pasture and hay crop. Banner oats have proven much the best oat for this district as has Arthur peas. Green Mountain potatoes yielded only slightly greater than Irish Cobbler, but both the seed from Northern Ontario and New Brunswick (which were practically equal in yield) surpassed that secured locally both in yield and freedom from disease. Unlike the season of 1918, Flint corns matured much more satisfactorily last season than Golden Glow and White Cap. The short season was unfavorable to the two later varieties both of which, however, matured sufficiently to make good ensilage. Large cleared areas of Eastern Ontario, unsuited for cultivation, are utilized for pasture, but a large proportion are not yielding profitable returns, owing to thinness of soil and the presence of weeds. About twenty-five acres of the farm connected with our school is only suited as a run for sheep, and had become choked with King Devil and other weeds. A start has been made with a view to learning the mixtures of grasses best suited to such areas. Sweet clover has been used for two years in an annual pasture, as a pasture and hay crop, and as a green manure. It has given a much greater yield of pasture than any clover or mixture of grasses and clovers used on the farm. Our cattle relish it as hay. Its only defect seems to be its slow growth after being cut for hay.

All the oat crop has been sold for seed to farmers in Eastern Ontario, as has most of the peas. Yields from these two crops were good and the quality of the seed excellent. All seed which will be sown on the farm in 1920 will be First Generation Registered Seed, and will be available for distribution to farmers desiring choice seed at reasonable prices.

A number of low parts on the farm were given an application of ground limestone rock during the fall, so that its utility can be demonstrated in the growing crops next season. The same practice will be followed with commercial fertilizers.

RECORD WITH STOCK

Believing that there can be no great objection to a Government demonstrating the worth of its herds and flocks by exhibiting them in leading show rings, the School exhibited thirteen head of cattle, eleven Holsteins and two Ayrshires, at the Central Canada Exhibition this year, and were successful in winning the following prizes: Four first; one second; three third; and one fifth.

The following is the record of the annual production of cows and heifers for the year:—

HOLSTEINS

Name	Age	Yearly Production
Sunshine of March	9	16,006.81 lbs.
Toitilla Rue	9	15,102.55 "
Juanita Teake	9	14,766.41 "
Monkland Jenny Lind	11	11,786.18 "
Francy Sylvia Teake	4	8,212.44 "
Average mature herd	....	13,174.87 "
Mercena Rue Lass	3	14,014.00 "
Margaret Pontiac Pride	2	9,212.49 "
Mercena Netherland Pride	2	7,051.48 "
Jewel DeKol Segis	2	6,967.25 "
Molly Pontiac Pride	2	6,386.84 "
Pontiac May Echo Walker	2	5,971.91 "
Riverdale Lyons Burke	2	5,825.73 "
Audry Vrouka Pontiac	2	4,911.01 "
Average junior herd	....	7,543.21 lbs.
Herd average	....	10,359.04 "

AYRSHIRES

Name	Age	Yearly Production
Sprucehurst Queen Nancy	6	9,107.56 lbs.
Brookside Nancy	7	7,487.98 "
Lady Hopeful	4	7,514.85 "
Herd average	....	8,036.79 lbs.

Almost all the Yorkshire hogs bred on the farm this year were sold as breeding stock to Eastern Ontario farmers. The same is true of the male lambs from the Shropshire flock. Clydesdales are also being bred.

BUILDINGS AND COURSES

The Main or Administration Building to be used as the chief teaching building at the School was commenced early in the spring and is now almost completed. It is 120 ft. by 61 ft., three stories high, and will be furnished ready to accommodate the students attending the regular courses in Agriculture and Household Science in the autumn of 1920. Only the Agricultural Engineering and Poultry buildings, both of which will be erected before the opening of the School in 1920, require to be erected.

Not being equipped for conducting regular classes in agriculture during the past winter, a series of Short Courses, extending from January 29th, to April 11th, was conducted as follows: (1) General Agriculture, Stock and Seed Judging; (2) Farm Power; (3) Household Science. The attendance, considering the prevalence of influenza, was gratifying to those in charge. There were forty-five regular students in attendance at the Course in General Agriculture; one hundred and thirty enrolled at the Farm Power Course, while two hundred and sixty availed themselves of the instruction in cooking, sewing and home nursing.

Plans are now being made for commencing the regular course, commencing in the fall of 1920. With the appointment of the regular teaching staff, and the installation of the necessary teaching equipment, the School will be in a position to commence the work for which it was intended, viz., assisting the young, prospective farmer of Eastern Ontario to become a public-spirited, prosperous citizen of his rural home community.

MISCELLANEOUS

VEGETABLE SPECIALIST

The work carried on under this head is intended to assist the commercial vegetable growers with their problems. Chief among the activities may be mentioned demonstrations in combatting disease and insect pests, demonstrations in the use of fertilizers and general instruction on all phases of vegetable growing and marketing.

During the past year work was done on the cabbage maggot and it was clearly shown that corrosive sublimate, at the rate of 1 oz. to 10 gallons of water would give perfect results. Even after plants had begun to wither 75 per cent. of the crop affected where work of this nature was carried on at Blenheim and Peterboro was saved and 90 per cent. at Leamington. In these cases the earth was drawn from the sides of the plant so as to expose the maggot and the corrosive sublimate poured against it. Other work was done on Black Heart in celery, celery blight, onion thrip, radish and onion maggot, aphids on late cabbage and cauliflower, and green worm in cabbage.

With greater difficulty in obtaining barnyard manure in adequate quantities, men in the vegetable industry are showing greater interest in commercial fertilizers. A few fertilizer demonstrations were conducted and these will be extended another year.

A full report of this work is to be found in the Vegetable Growers' Report.

FIELD CROP SPECIALIST

Following up work previously inaugurated, efforts were continued to improve the potato crop in the Province. These efforts were concentrated among the commercial potato growers. The Department assisted in bringing in a few carloads of certified No. 1 seed from New Brunswick and Prince Edward Island, as well in placing a carload from the Rainy River district. These were placed with growers in Algoma, Thunder Bay and Muskoka Districts. Unfortunately, the season proved unfavorable, but about thirty-five carloads of certified seed potatoes were available for the market in the fall. In the inspection work necessary for certification, this branch had the co-operation of the Botany Division of the Federal Department. In Northern Ontario, 498 fields embracing 597 acres owned by 369 growers, were inspected. This acreage was one hundred per cent. greater than the year previous, a development proportionately greater than in any other Province. Of the standard varieties, only 19.5 per cent. of the Green Mountains and 19.0 per cent. of the Irish Cobbler were rejected and a total of nearly seventy per cent. of these varieties were passed for No. 1 seed. A survey of Old Ontario for potato diseases was also made. This work covered 858 growers, 1,211 fields and 2,740 acres. These fields were divided as follows: 729 used native grown seed, 204 first generation imported, 57 second generation imported. The showing of leaf roll under these heads was: native seed 7.2 per cent., first generation imported 1.7 per cent., second generation imported 5.4 per cent., showing how rapidly the disease develops with seed which has been in the Province more than one year. As to the source of supply with relation to leaf roll the standing was: Northern Ontario 0.8, New Brunswick 1.7, Prince Edward Island .05.

A large number of demonstrations were conducted in co-operation with Agricultural Representatives. These were inspected by the Botanical Department, O. A. C., for disease, and similar results to the above shown. In yields, Northern Ontario seed was at the top in practically every case.

In addition, a great deal of personal work was done among the growers. In all, 466 growers were visited by the Field Crop Specialist, and 918 growers and 290 other interested parties were addressed by this officer at some fifty-five meetings. A great deal of publicity was also obtained by exhibits at numerous fairs.

CORN SPECIALIST

In addition to acting as Secretary of the Ontario Corn Show, the Corn Specialist devotes his efforts to assisting the growers of seed corn in the Western Peninsula and encouraging the use of Ontario grown seed by ensilage growers in other parts of the Province. For one thing, efforts have been made to standardize varieties. This has been accomplished through the Association. In twelve years the number has been reduced from fifty to thirteen. Of these, six are recognized as standard by the Association and make up ninety-five per cent. of the entries at the Corn Show. Tests are now being made of strains within varieties, and several experiments were carried on along this line with the cooperation of growers, but conclusive results have not been secured as yet. Considerable educational and judging work has also been done by the Corn Specialist.

FEDERAL GRANT

Acknowledgment is made of the monies received under the Federal Agricultural Instruction Act passed at Ottawa some years ago. These monies are subject to an agreement between Federal and Provincial Ministers and the agreement for the past year made provision for the following expenditures:—

AGRICULTURAL COLLEGE AND SCHOOLS

1. *Ontario Agricultural College*:—		
(a) Buildings, equipment and furnishings	$40,000 00	
(b) Salaries and expenses, additions to staff, maintenance	15,000 00	$55,000 00
2. *Agricultural School and Farm*:—		
(a) Capital expenditure	45,000 00	
(b) Maintenance, purchase of stock, machinery, repairs, services, expenses and equipment	15,000 00	60,000 00

INSTRUCTION AND DEMONSTRATION

3. Agricultural Representatives, including clerical and other assistance in connection with the administration	126,000 00
4. Extension work in Household Science in Rural Communities	1,500 00
5. Co-operation and markets, educational work in connection with the marketing of farm products including organization of co-operative societies	12,000 00
6. Demonstration and instruction in vegetable growing	12,000 00
7. Stock and Seed Judging Short Courses and Institute Lectures	2,000 00
8. Women's Institute Work, including Courses in Cooking, sewing, etc.	5,000 00
9. Short Courses for Fall Fair, Field Crop and Poultry Judges including travelling and living expenses	5,000 00
10. Lectures on Horticulture	500 00
11. Demonstrations in growing and handling fruit	1,803 26
12. Demonstrations with vegetables and hardy fruits in New Ontario	4,000 00

13.	Vineland Horticultural Experiment Station, Experimental	2,000 00
	work	2,000 00
14.	Demonstration work on soils	5,000 00
15.	Beekeeping	1,000 00
16.	Instruction and special educational work in growing and handling corn	3,500 00
17.	Elementary Agricultural Education	40,000 00
	Total	$336,303 26

Each appropriation to include services, expenses and equipment.

These expenditures were made under the supervision of the branch under which the work is carried on.

Ontario Department of Agriculture

FORTY-FIFTH ANNUAL REPORT

OF THE

Ontario Agricultural College

AND

Experimental Farm

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

Printed by
THE RYERSON PRESS.

To His Honour LIONEL H. CLARKE,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration, the Forty-fifth Annual Report of the Ontario Agricultural College and Experimental Farm, for 1919.

Respectfully submitted,

MANNING W. DOHERTY,

Minister of Agriculture.

Toronto, 1920.

THE ONTARIO AGRICULTURAL COLLEGE, GUELPH

Hon. Manning W. Doherty, *Minister of Agriculture, Toronto.*

FACULTY OF INSTRUCTION, 1919.

(All, except the President, arranged in order of Seniority.)

G. C. Creelman, B.S.A., LL.D.	President
H. H. Dean, B.S.A.	Professor of Dairy Husbandry
C. A. Zavitz, B.S.A., D.Sc.	Professor of Field Husbandry
J. Hugo Reed, V.S.	Professor of Veterinary Science
R. Harcourt, B.S.A.	Professor of Chemistry
Miss M. U. Watson	Director of Home Economics
John Evans	Professor of Manual Training
C. J. S. Bethune, M.A., D.C.L.	Professor of Entomology and Zoology
W. R. Graham, B.S.A.	Professor of Poultry Husbandry
J. W. Crow, B.S.A.	Professor of Horticulture
J. E. Howitt, M.S.A.	Professor of Botany
D. H. Jones, B.S.A.	Professor of Bacteriology
O. J. Stevenson, M.A., D.Pæd.	Professor of English
Wade Toole, B.S.A.	Professor of Animal Husbandry
W. C. Blackwood, B.A.Sc.	Professor of Physics
F. E. Millen, B.S.A.	Professor of Apiculture
L. Caesar, B.A., B.S.A.	Associate Professor of Entomology
W. J. Squirrell, B.S.A.	Associate Professor of Field Husbandry
J. P. Sackville, B.S.A.	Associate Professor of Animal Husbandry
Miss Annie Ross, M.D.	Lecturer in Physiology, Home Nursing and Psychology
H. H. LeDrew, B.S.A.	Lecturer in Economics and English
Wm. Hunt	Lecturer in Floriculture
E. W. Kendall	Lecturer in Manual Training
H. L. Fulmer, B.S.A.	Lecturer in Chemistry
R. R. Graham, B.A., B.S.A.	Lecturer in Physics
R. E. Stone, B.Sc., Ph.D.	Lecturer in Botany
A. W. Baker, B.S.A.	Lecturer in Entomology
T. H. Lund, B.S.A.	Lecturer in Bacteriology
A. Leitch, B.S.A.	Lecturer in Farm Management
G. H. Unwin, B.S.A.	Lecturer in English and French
A. L. Gibson, B.S.A.	Lecturer in Chemistry
A. H. Tomlinson, B.S.A.	Lecturer in Forestry and Landscape Gardening
R. C. Moffatt, M.A.	Lecturer in Physics
W. L. Iveson, M.A.	Lecturer in Geology and Chemistry
J. A. Neilson, B.S.A.	Lecturer in Horticulture
J. C. McBeath, B.S.A.	Lecturer in Animal Husbandry
F. L. Ferguson, B.S.A.	Lecturer in Physics
W. H. Wright, B.S.A.	Lecturer in Botany
J. Coke, B.S.A.	Lecturer in Farm Management
Miss M. A. Purdy	Demonstrator in Chemistry
Miss Jean Roddick	Instructor in Domestic Science
Mrs. F. Doughty	Demonstrator in Domestic Art
Miss Alta V. Dickey	Instructor in Domestic Art
Miss Belle Millar	Demonstrator in Dairying
G. J. Spencer, B.S.A.	Demonstrator in Entomology
R. J. Skelton, B.S.A.	Demonstrator in Dairying
H. G. Crawford, B.S.A., M.S.	Demonstrator in Entomology
E. S. Snyder, B.S.A.	Demonstrator in Poultry
A. Davey, B.S.A.	Demonstrator in Bacteriology
A. C. Wheatley, M.A.	Demonstrator in Chemistry
E. E. Reilly, B.S.A.	Demonstrator in Farm Management
Miss H. Theodora Job	Instructor in Normal Methods
Miss J. C. Bradley	Demonstrator in Laundry and Household Administration
Miss A. I. Strachan	Supervisor of House Practice
Miss Grace Conover	Demonstrator in Domestic Science
T. J. McKinney	Instructor in Dairying
R. C. Frith	Resident Master and Instructor in English

COLLEGE OFFICERS.

G. C. Creelman, B.S.A., LL.D.	President
S. Springer	Bursar
S. H. Gandier, B.S.A.	Secretary
Miss J. Gardiner	Librarian
Miss A. O. Hallett	Assistant Librarian
W. O. Stewart, M.D.	Physician
Miss M. Montgomery	Dietitian

ONTARIO AGRICULTURAL COLLEGE

AND EXPERIMENTAL FARM

1919

To the Honourable the Minister of Agriculture:

SIR,—I have the honour to submit herewith the Forty-fifth Annual Report of the Ontario Agricultural College and Experimental Farm, including the work of Macdonald Institute for the year 1919.

A REVIEW.

In forty-five years this Institution has evolved from a "Model Farm" idea into an educational institution where the sciences are taught as thoroughly, and where laboratory methods are as up-to-date as in any of our higher institutions of learning.

Long ago, we came to appreciate the fact that an Agricultural College was not a place to teach a boy how to farm, but rather an institution where a person with good farm practice might be given a liberal education and taught better methods of farming.

After a "Degree" course was added in 1887, the authorities thought best to require a definite standard of entrance, and University Matriculation was decided upon. To everybody's dismay such a standard was ahead of the sentiment of that time. Candidates with Matriculation because they had been at school all their lives had little or no farm practice, while others who had fair schooling and were admitted to the two years' Course developed during that period into first-class scholars and would have made creditable graduate students but were barred from going further for lack of University Matriculation standing. The College authorities then decided upon another method. No stringent standard of entrance was set up, but those only who attained 50 per cent. on all subjects of the Second Year and 60 per cent. in English, were permitted to go on to the Third and Fourth Years, looking toward the degree of B.S.A. This has worked satisfactorily and with the further provision that each applicant must have had good farm practice, we have a more uniform class of students than formerly. The question of higher entrance standard was thus left until the college became better known and the value of education more generally appreciated.

About half of the Second Year men "make the grade," while the others receive a Diploma and return to their farms with a knowledge of the principles underlying their farm work and with, at least, a better knowledge of English.

But what becomes of the B.S.A. men after graduation?

Periodically, some agricultural newspaper man, or some member of the Legislature writes an article or makes a speech deploring the fact that our College graduates are not returning to their farms and that the College is educating farm lads away from the country. The facts are that of all the men who have gone through this Institution in 45 years, 54 per cent. are now living on farms, and in the last eleven years, less than 3 per cent. of all our ex-students have deserted the business of Agriculture.

Many men on graduating (in fact before graduation) every year, are offered lucrative positions in so-called professional work. The agricultural press of Canada is largely in the hands of our men. Every Provincial Department of Agriculture and nearly every Experimental Farm, both Federal and Provincial, have O.A.C. men directing their affairs. Agricultural Representatives by the score are helping to better farming and farm conditions, while our Agricultural Chemists and Botanists and Entomologists, and Horticulturists and Animal Husbandry men and Poultry Experts and Dairymen are hard at work all over the world.

It may be remarked, also, that scores of these men hope to own and operate farms of their own just as soon as they can afford it. Unlike other professions, an O.A.C. graduate besides having brains and a diploma and a shingle to hang out, requires a farm and farm buildings and farm live stock and farm machinery. In a very small number of cases can his father supply these necessities. If the old people retire to town they must have rent from the farm or interest on the value of the place, in order to exist in their new home. Very many graduates, then, unless they take rented farms or work out as hired men, are forced to take up professional agriculture in order to get a start. I had a letter once from the proprietor of an agricultural newspaper deploring the fact that more intelligence was not exercised by the ordinary farmer, and wanting to know why more of our graduates did not return to the farm; then, after several suggestions in reference to the better management of the College, he asked if I could strongly recommend Mr. ——— of the present graduating class as Assistant Editor of his paper.

The truth of the whole matter is that we need in the Province not only more good farmers, and as many of them as the College can turn out, but we must also have trained men along special lines and also trained general men in Agriculture to help the great body of farmers who are doing the actual farming.

What of "the Future?"

Now new conditions are arising and must be met. City men of wealth are going in for farming and are offering handsome salaries for farm managers. Are we justified in recommending College graduates for these positions?

Live stock men are crying out for shepherds and herdsmen, and will pay two, three or four times as much as a farmer can afford to give a hired man. Should we start a course for such men?

The Directors of our Experimental Farm want trained Entomologists, Botanists, Chemists, and Experimentalists, men who have learned patiently through many failures of seed and season, to keep on, and who have the instincts and the consuming desire for accurate knowledge so necessary for successful research. Should the O.A.C. attempt to qualify men for such work?

We realize our limitations, and up to this time any success which we have met with, through our teaching faculty, has been because we have insisted on our students working hard at subjects of general culture, such as English, as well as learning something of all the sciences underlying the business of farming, with the result that our ex-students have a good general useful education and are loyal to the Institution which gave them such a start. If I can judge the minds of this Province, the people are pleased with the way our graduates take hold and become leaders in the several communities in which they settle.

EXTENSION WORK.

We have now twenty stenographers on the College pay roll. Is that justified? What amount of time do our Professors spend over correspondence? Is such well spent, and is it necessary?

These questions are often asked and should be answered.

For forty-five years this College has been gradually getting closer to the men and women on the farms. For a long time our real farmers looked askance at book farming methods, but as our practical experiments began to show results, with travelling dairies, with soils and drainage, and feeding live stock and milk testing and egg laying and weed killing and the originating and improving of seed for farm crops, then our farmers became interested. We have now more than five thousand farmers on their own farms conducting experiments in co-operation with the College, and reporting to us each year.

As then the farmers become interested they write for information, and our College mail each day is greater than the towns of Elora and Fergus combined—about 3,000 people.

Farmers are poor advertisers, but working so much alone they think over their problems much more than do townspeople who chatter and gossip a good deal. What more natural, therefore, than having failed to solve a problem while following the plow all day, the plowman should sit down at night and write us about it? We know that we are reaching thousands of farmers in this way.

BULLETINS AND REPORTS.

In the early days it was our custom to issue a report each year indicating progress and giving practical information on all kinds of farm activities. Later on, it was necessary to issue leaflets on special subjects, and gradually the "Bulletin" came into existence. We have in all issued *two hundred and sixty-nine of these books,* each on a specific subject. I venture to say that these publications, in the aggregate, cover fully and well all of the sciences of Agriculture as applied to the Province of Ontario. That these publications are appreciated we know from the great demand and by the constant requests of The Department for revision and reprinting.

INCREASE IN ATTENDANCE.

As will be seen elsewhere in this report 2,115 students actually attended and received instruction in all classes during this year. It has meant much overcrowding of classes, much dividing up and repeating lectures, much crowding in the residence and much scurrying around to find boarding accommodation in Guelph for those who could not be accommodated in the Dormitory. Practically all of the 2nd, 3rd, and 4th Year Students (nearly 300 men) are now living in boarding houses in town. The new Dormitory which is in process of construction should help out very materially next session.

The short courses have also been popular and the attendance at these courses in special subjects, is increasing rapidly.

I should perhaps make special mention of the Summer School for Teachers and Rural Leaders. More than five hundred men and women were in attendance at these classes during July and August.

THE STAFF.

All of the foregoing description of our growth leads naturally to the effect of this development on the men who are doing the work. We have an efficient undermanned and underpaid staff. We have lost fourteen members of our staff this year all expressing their regrets at leaving the College, but each stating that he could not afford to turn down the better pay offered.

In one instance, one of our Lecturers was offered $3,000 a year to go to another Provincial Agricultural College—a larger salary than we are paying the Professor in charge of that Department here.

I say it advisedly—fully believing every word—these men who are doing good work and know our conditions and our needs, should not be permitted to leave the College and the Province because of a few hundred dollars increase in salary. I believe that this College in its various activities has earned millions of dollars for this Province, and every good man that drops off our staff because his worth is appreciated more in a like institution, is a distinct financial loss to Ontario. Salaries must be raised, both Seniors and Juniors, or we shall lose the high prestige which this Institution has long enjoyed, and which it should retain at all costs.

The work is worth while, the cause is worthy but the remuneration is insufficient to attract or keep the best men.

OUR EX-STUDENTS.

Approximately twenty thousand young men and young women have enrolled at the Ontario Agricultural College since its inception in 1874. About forty-five hundred entered the regular agricultural course, eighty-one hundred the winter short courses, twenty-eight hundred the summer short courses, two hundred the Manual Training course and forty-seven hundred the long and short courses in Home Economics.

Within the past year a survey has been made with the object of securing the present addresses and occupations of the ex-students who entered the College for the regular course in agriculture and also of ascertaining the part taken by the students and the ex-students in the recent war. Although it is exceedingly difficult to make the register entirely complete, much interesting and valuable information has been obtained.

Of the 4,491 registrations in the regular agricultural course, 554 are of students in attendance at present and 3,937 are of ex-students. Of these ex-students, 1,574 received the Associate Diploma in agriculture granted by the College at the end of the two years' course, and of this number 698 received the B.S.A. degree at the end of the complete course.

The ex-student register in the office of the Experimental Union now contains the addresses of 98 per cent. of the Graduates, 94 per cent. of the Associates and 62 per cent. of the Under-associates. Of the entire ex-student body in the regular course 311 deaths are recorded, fully one-third occurring in the recent war.

LOCATION OF EX-STUDENTS.

Of the students who entered the regular agricultural course, 86 per cent. registered from Canada, 3 per cent. from twenty-five States of the American Union and 11 per cent. from forty-three other countries.

The present addresses of the ex-students show 85 per cent. located in Canada, 9 per cent. in forty States of the American Union and 6 per cent. in thirty-one other countries. Of those who received the B.S.A. degree, 81 per cent. are at present in Canada, 12 per cent. in twenty-four States of the American Union and 7 per cent. in fourteen other countries.

Of the ex-students of the regular course now residing in Canada, 72 per cent. of the total number and 67 per cent. of the B.S.A. men are located in the Province of Ontario.

OCCUPATIONS OF EX-STUDENTS.

According to the latest information received, 80 per cent. or four-fifths of all the ex-students of the regular course, 80 per cent. of the Diploma men and 92 per cent. of the B.S.A. men are engaged in agricultural work.

It is found that if the forty-four years of the College, from 1874 to 1917, inclusive, are divided into four periods of eleven years each, the ex-students of the regular course are engaged at the present time in occupations according to the following percentages:

Four-eleven-year periods.	Farmers.	Agriculturists other than Farmers.	Non-Agriculturists.
1874-1884	50	5	45
1885-1895	58	16	26
1896-1906	57	30	13
1907-1917	50	42	8

The percentage on the land is fairly constant, varying not more than 4 per cent. in any one period from the general average of 54 per cent. It is interesting to note that the *increase* in percentage of those following agricultural work other than farming corresponds closely with the *decrease* in percentage of those following non-agricultural pursuits.

Five ex-students who are farmers fill the important positions of Premier, Minister of Agriculture, Provincial Secretary, Minister of Education and Minister of Public Works of the Ontario Government.

Included under agricultural work other than farming are Officials in Government Agricultural departments; Agricultural College and University presidents, professors and investigators; Agricultural editors; Agricultural representatives; members of the Soldier Settlement Board; Cheese makers; Butter makers; Drovers; Farm managers, etc. The 20 per cent. of ex-students of the regular course not engaged in agricultural work comprise Clergymen; Missionaries; Veterinary Surgeons; Implement Agents; Flour Millers; Produce Dealers; Bakers; Manufacturers; Lawyers, etc.

EX-STUDENTS AND THE WAR.

In the recent war 789 of the students and ex-students of the regular College course in Agriculture enlisted. In the service ranks there were over two hundred and thirty Commissioned Officers, including 2 Brigadier-Generals, 2 Colonels, 6 Lieutenant-Colonels, 15 Majors, 49 Captains and 159 Lieutenants. For services in the field at least 50 of the ex-students received decorations from the British Government, including the following: D.S.O. 1, M.C. 25, M.C. and Bar 2, D.S.C. 1, D.C.M. 8, and M.M. 11. In addition to these a number of ex-students received decorations from the French and Italian Governments.

No less than 107 O.A.C. men lost their lives in the war. In memory of these it is planned to erect a Memorial Hall on the College campus.

DIFFERENT SURVEYS.

In a previous survey made about twenty years ago for the first twenty-five years of the Ontario Agricultural College, it was found that 54 per cent. of the ex-students of the regular course were resident in Ontario and of this number 71 per cent. were farmers.

It is learned from the present survey that 61 per cent. of the regular course ex-students are resident in Ontario, and of these 65 per cent. are farmers and 21 per cent. are engaged in other agricultural pursuits, making a total of 86 per cent. at agricultural work.

In this connection it is interesting to note that in a survey made of the Alumni of Yale University in Connecticut it was found that only 2 per cent. of the graduates of that institution were in any way engaged in agricultural work.

To educate for agriculture it seems essential to do it through institutions where the ideals and the aspirations are in close sympathy with rural life.

1919.

As was anticipated the year 1919 opened with a rush of students towards all of our Canadian Colleges.

This was to be expected after five years of serious interference with the academic education of so many of our young men. We got our share at the first of the year, and then applications began to come in by the hundreds for short courses and for the regular course commencing in September. Two thousand one hundred and fifteen students in all have taken longer or shorter courses at this Institution since the 1st of January last. Fortunately, the work could be spread out and in every month of the year we had classes receiving instruction in Agriculture.

The men from overseas kept dropping into the classes all during the season, and we were not only glad to welcome them back but pleased to give them every consideration possible because of the time lost while fighting our battles. In the regular course alone there are now two hundred returned men.

MEMORIAL HALL.

Early in the year, letters began coming in from graduates all over the country asking what was to be done regarding a Memorial for the one hundred and seven O.A.C. men who had lost their lives during the war.

Faculty meetings were held, and committees appointed to look into the whole matter; it was finally decided to recommend that a Memorial Hall be erected large enough to seat the entire student body and their friends, and with provision for a pipe organ to be used on Sunday afternoons at the regular College chapel services. It was estimated that the building and equipment would approximately cost one hundred thousand dollars. The Government generously donated $40,000 as their share, and the Committee undertook to raise $60,000 among the ex-students and friends of the College. Plans were prepared and distributed and the work of collecting the money is now under way. It is proposed to erect this building on the College campus just below the new men's dormitory facing Massey Hall.

OTHER NEW BUILDINGS.

From funds allotted to the Province under the Federal Agricultural Instruction Act, we have this year let a contract for a fine new stone residence for men.

The plan calls for 150 persons and had we this room available now we could fill it to overflowing. We have 250 men crowded into the old residence and yet have more than 300 who are compelled to find rooms outside.

We also have a new building under way to house the Apiculture Department. This branch has been using the basement of Macdonald Institute for some years and as the work has developed, their quarters have become very much crowded. The new building is being erected in one of the horse paddocks just up beyond the Field Husbandry Building.

A new Piggery is also in course of construction. The location of our former piggery does not seem to have been satisfactory as the health of the pigs is often very much impaired. The new building is on high land, well up the College lane, and is 127 feet long and 32 feet wide. This will increase the accommodation for the pigs and make it easier for good experimental work with swine.

Returned Soldiers.

The style of warfare in which most of our soldiers were engaged seems to have turned their heads towards the country, so that a large percentage of our returned men have expressed the desire to go into farming as a business. The Soldier Settlement Board and the Soldier Civil Re-establishment Commission are working together to help these men, and are providing them with places on farms where they may learn or review ordinary farm work, and these same Boards are in addition granting courses at Agricultural Colleges in the wintertime. We have had a large number of these men during the year and have a large number in the regular course at the present time.

In January, a short course of three months was formed with one of our graduates, R. W. Maxwell, in charge. These men were required to start at 6.30 in the morning, look after the live stock in the stables, milk the cows and so forth. They also, later in the day, took instruction in the handling of machinery, in the preparation of soils, in the science of feeding of live stock, handling of poultry, as well as horses, cattle, sheep and swine. They were kept going each day during the entire session, and all agreed, on its completion, that they had had a good practical course.

We also had a number of blind men who took up the subject of poultry with more or less success, all remaining here for the first six months of the year. We have now 200 returned men in the course at the College.

College Work and Progress.

The attendance at Agricultural short courses in 1919 was as follows:—

Dairy Courses	97
Stock and Seed Judging	80
Poultry Raising	20
Horticultural Courses	74
Apiculture	42
Drainage and Drainage Surveying	11
Farm Power	263
Special Six Months' Course for Returned Soldiers	17
Special Course in Poultry for Blind Soldiers	6
Special Course in Poultry for Other Soldiers	8
Total	618

STOCK JUDGING.

At Chicago this year with 18 teams competing, our students stood 15th. After standing first last year, this seems quite a drop, but it must be remembered that the competition gets keener all the time, and that the American Colleges have the advantage of instruction in breeds of stock that are not known in Canada. It is good training for these men to learn the different methods that are pursued in the contest, and also the splendid stock that is exhibited at the show.

The following men composed the team:—

W. C. Hopper, Westboro, Ont.
S. W. King, Hickson, Ont.
F. Wiggins, R.R. No. 4, Kemptville, Ont.
G. B. Hood, Guelph, Ont.
A. F. Hansuld, Tavistock, Ont.

RESULTS OF STUDENTS' JUDGING COMPETITION, WINTER FAIR, 1919.

Horses.

1. P. C. Connon	180
2. L. H. Hamilton	174
3. R. J. Greanie	157
4. S. S. Breckon	156
5. L. L. Chapman	155

Sheep.

1. D. G. Townsend	189
2. L. H. Hamilton	184
3. C. H. Bowman	183
4. N. Curtis	181
5. J. R. VanHaarlen	175

Dairy Cattle.

1. F. C. McLennan	196
2. W. A. Hume	186
3. R. A. Bissonnette	183
4. W. Stackhouse	179
5. H. G. Oldfield	178

Beef Cattle

1. D. G. Fidlar	193
2. E. L. Wise	181
3. Jas. Beaton	179
4. F. S. Thomas	175
5. G. J. Thompson	167

Swine.

1. E. C. Goudie	181
2. W. E. Snowden	173
3. D. J. Lerch	170
4. A. B. Macdonald	169
5. P. D. Vahey	167

Poultry.

1. E. C. Foreman	245
2. G. L. Matheson	235
3. Arthur Wilson	230
4. C. A. Campbell	225
5. R. T. Hicks	222

CLASS 98 INTER-YEAR TROPHY-STANDING.

1. Fourth Year.
2. First Year.
3. Third Year.
4. Second Year.

COLLEGE ATTENDANCE.

The following are the figures in each course held throughout the year:—

(Figures for general courses include students of winter term and new students of fall term.)

General Course	615
Specialists in General Course Work	16
Manual Training (One Year Normal Course)	9
Dairy Courses	97
Stock and Seed Judging	80
Poultry Raising	20
Horticulture	74
Apiculture	42

Drainage and Drainage Surveying	11	
Farm Power	263	
Courses for Returned Soldiers	31	
		1,258
Domestic Science (at Macdonald Institute)		324
Summer Courses:		
High School Teachers—1st year, 27; 2nd year, 21	48	
Public School Teachers: 1st year, 171; 2nd year, 166	337	
School for Rural Leadership	52	
Farm Mechanics	10	
Course for School Inspectors	86	
		533
Total		2,115

ANALYSIS OF COLLEGE ROLL (FALL TERM, GENERAL COURSE), 1919.

From Ontario

Algoma	5	Lambton	10	Prince Edward	2
Brant	10	Lanark	13	Rainy River	1
Bruce	8	Leeds	10	Renfrew	4
Carleton	53	Lennox & Addington	4	Russell	2
Dufferin	2	Lincoln	17	Simcoe	14
Dundas	8	Middlesex	15	Stormont	1
Durham	3	Muskoka	7	Temiskaming	2
Elgin	11	Nipissing	3	Thunder Bay	2
Essex	12	Norfolk	5	Victoria	1
Frontenac	11	Northumberland	2	Waterloo	14
Glengarry	7	Ontario	14	Welland	8
Grey	6	Oxford	18	Wellington	43
Haldimand	7	Parry Sound	3	Wentworth	18
Halton	7	Peel	8	York	64
Hastings	9	Peterborough	6		
Huron	12	Perth	13	Total from Ontario	529
Kent	5	Prescott	4		

From Other Provinces of the Dominion.

Alberta	4	Nova Scotia	18	Saskatchewan	4
British Columbia	8	Quebec	4		
New Brunswick	2	Prince Edward Island	1	Total from other Provinces	41

From Other Countries.

Bermuda	1	Scotland	3	U.S.A.	6
England	2	South Africa	1	U.S. of Columbia	1
Japan	1	Switzerland	1		
				Total from other countries	16

Age and Religious Denominations.

The limits of age in the General Course, 1919, ranged from 17 to 36 years. The average year was 21.

Religious denominations of students registered for the fall term were:—

Anglican	104	Disciples of Christ	4	Methodist	180
Baptist	39	Evangelical	2	No Religion	12
Brethren	3	Friends	4	Presbyterian	188
Christadelphian	1	Lutheran	5	Roman Catholic	17
Congregational	3	Mennonite	2	Unitarian	1

Degrees and Diplomas in Agriculture.

The following students graduated in 1919 with the degree of Bachelor of the Science of Agriculture (B.S.A.).

Chemistry and Physics Option.

Brink, R. A., Woodstock, Ont.
Henry, C. H., Truro, N.S.

Biology Option.

Huckett, H. C., Torquay, England.

Horticulture Option.

Allan, R. D., 140 Carling Ave., Ottawa.
Jones, T. H., Fruitland, Ont.
Selwyn, H. H., Ottawa, Ont.

Bacteriology Option.

Munro, J. B., Slate River Valley, Ont.
Shales, J. M., Perth Road, Ont.

Agriculture Option.

Aylsworth, D. F., Bath, Ont.
Begg, R. E., Tiverton, Ont.
Caldwell, W. C., Carp, Ont.
Edgar, J. D., Guelph, Ont.
Grant, G. S., Port of Spain, Trinidad, B.W.I.
Gunn, W. R., Avonmore, Ont.
Hessel, E. C., Vernon, B.C.
Higgins, J. R., Kemptville, Ont.
Hunter, F. G., 628 Huron St., Toronto.
Lamont, C., Mount Brydges, Ont.
Luckham, C. F., Burnam, Ont.
Matheson, D. J., R.R. No. 3, Lucknow, Ont.
McCall, G. W., Fort William, Ont.
Mackenzie, C. F., Guelph, Ont.
Stillwell, E. C., Elgin, Ont.
Tice, C., Guelph, Ont.

RECIPIENTS OF ASSOCIATE DIPLOMAS, 1919.

Begg, R. E., Tiverton, Ont.
Butt, C. J., Essondale, B. C.
Clark, H. R., Collins Bay, Ont.
Clemens, H. R., 70 Rose St., Guelph, Ont.
Cohen, C. E., 26 Avoca Ave., Toronto.
Collier, S. G., Lougheed, Alta.
Coon, W. O., Elgin, Ont.
Deneau, C. R., R.R. 1, North Malden, Ont.
Dewan, P. M., Osgoode Station, Ont.
Eidt, C. C., 271 Cambria St., Stratford, Ont.
Ferguson, C. M., R.R. 3, Parkhill, Ont.
Flatt, C. M., R.R. 2, Hamilton, Ont.
Frith, R. C., Westboro, Ont.
Goodier, R. M., Maxville, Ont.
Grant, W. G., Stittsville, Ont.
Ireton, A. G., R.R. 2, Perth, Ont.
Irvine, S., Dalkeith, Ont.
Jamieson, M. C., 54 Irving Ave., Ottawa.
Jukes, R., Amherstburg, Ont.
Laing, H., R.R. 2, Carp, Ont.
Lamont, C., Mount Brydges, Ont.
Matthews, T. M., Guelph, Ont.
Marshall, N. A., Sault Ste. Marie, Ont.
Macarthur, R., 344 Piccadilly St., London.
McCague, J. J. E., R.R. 2, Gormley, Ont.
McCrimmon, J. G., R.R. 2, Williamstown.
Shorey, W. P., Napanee, Ont.
Shoemaker, J. S., 23 Fourth Ave., Ottawa.
Silcox, W. B., R.R. 3, Shedden, Ont.
Sippel, O. A., Tavistock, Ont.
Snyder, G. B., Kitchener, Ont.
Taylor, H. H., 14 McDougall Ave., Ottawa.
Thomson, W. D., Whitby, Ont.
Young, W. A., 211 Gilmour Ave., Toronto.

Professional Dairy School Certificates Issued During 1919.

Bain, Geo., R.R. 1, Thamesford, Ont.
Chatreau, Bert, Toronto Creamery, Toronto.
Coombs, A. H., Carlyle, Sask.
Fairweather, W., 46 Huskisson St., Guelph.
Helmuth, E., Baden, Ont.
Kaufmann, W. L., Tavistock, Ont.
Parfitt, E. H., 1066 82nd St., New York.
Scott, Bert B., Canora, Sask.
Statham, Isaac, Dashwood, Ont.
Davis, H. L., Guelph.
Smith, E. R., Mount Forest, Ont.

Manual Training Certificates, 1919.

Burke, W. E., Sault Ste. Marie, Ont.
Courtney, A. W., Princeton, Ont.
Poast, O. W. L., Omemee, Ont.
Ponting, H. R., R.R. 2, St. Williams, Ont.

MEDALS, SCHOLARSHIPS AND PRIZES AWARDED, APRIL, 1919.

1905 Scholarship.

($50 awarded by committee of staff to best "all round" man at close of third year).—W. C. Hopper, Westboro, Ont.

Governor-General's Silver Medal.

(General proficiency, first and second year work).—R. Jukes, Amherstburg, Ontario.

George Chapman Scholarship.

($20 in books, proficiency in English, first and second year).—R. Jukes, Amherstburg, Ontario.

Second Year Essay.

($10 in books).—J. S. Shoemaker, Ottawa, Ont.

General Proficiency, First and Second Year Work.

($10 in books).—R. Jukes, Amherstburg, Ont.

Scholarships of $20 Each Awarded for Proficiency in First Year Work.

Group 1.—J. H. Shaw, R.R. 2, Hespeler, Ont.
Group 2.—E. R. Sheppard, Waubashene, Ont.
Group 3.—L. H. Leaver, 32 Penwood Road, Toronto, Ont.
Group 4.—J. M. Emigh, R.R. 2, Burgessville, Ont.

Canada Industrial Scholarships.

(Prizes for Essays, donated by Canadian Manufacturers' Association.)
1st, $50.—J. D. Edgar, Guelph, Ont.
2nd, $30.—C. M. Flatt, R.R. 2, Hamilton, Ont.
3rd, $20.—F. W. Stock, Tavistock, Ont.

New Bulletins Issued During 1919 by the College Staff.

No. 268—Farm Crops	Dr. C. A. Zavitz.
No. 269—Hay and Pasture Crops, Grasses, Clover, etc.	Dr. C. A. Zavitz. W. J. Squirrell, B.S.A.
No. 271—The Apple Maggot	L. Caesar, B.S.A. W. A. Ross, B.S.A.

Changes in Staff.

During the year, the following have resigned from the staff:—

Dr. Burton N. Gates, Professor of Apiculture.
Prof. W. H. Day, Professor of Physics.
F. N. Marcellus, B.S.A., Lecturer in Poultry.
A. Maclaren, B.S.A., Lecturer in Rural Sociology.
R. J. Skelton, B.S.A., Demonstrator in Dairying.
H. L. Davis, B.S.A., Assistant in Dairying.
R. M. Aiton, B.S.A., Assistant in Botany.
C. W. Stanley, B.S.A., Assistant in Chemistry.

Thomas Amos, Farm Foreman.
Miss Eastcott, Analyst.
A. H. Musgrave, Resident Master.
Miss E. J. Rogers, Demonstrator in Laundry and Household Administration.
Miss Rona Fraser, Supervisor of House Practice.
Miss Alice Boughner, Housekeeper Macdonald Hall.
Miss Netta Nixon, Demonstrator in Domestic Science.

The following have been appointed to fill the vacancies:—

F. E. Millen, B.S.A., Professor of Apiculture.
W. C. Blackwood, B.A.Sc., Professor of Physics.
F. L. Ferguson, B.S.A., Lecturer in Physics.
J. P. Sackville, B.S.A., Associate Professor of Animal Husbandry. (Returned from Winnipeg College.)
J. McBeath, B.S.A., Lecturer in Animal Husbandry.
G. J. Spencer, B.S.A., Demonstrator in Entomology. (Returned from overseas.)
D. R. Sands, B.S.A., Assistant in Botany.
J. F. Francis, B.S.A., Assistant in Poultry.
W. O. Bennett, B.S.A., Assistant in Poultry.
J. McLean, B.S.A., Temporary Assistant in Dairying.
T. H. Jones, B.S.A., Temporary Assistant in Horticulture.
M. H. Howitt, B.S.A., Temporary Assistant in Horticulture.
J. P. S. Nethercott, B.A., Temporary Lecturer in English and French.
A. C. Wheatley, B.A., Demonstrator in Soil Chemistry.
M. Grimes, Fellow in Chemistry.
Miss Ridout, Analyst.
J. E. Ramsdale, Draughtsman, Landscape Gardening.
R. C. Frith, Resident Master.
L. G. Heimpel, B.S.A., Farm Foreman.
Miss Jean Bradley, Demonstrator in Laundry and Household Administration.
Miss Grace Conover, Demonstrator in Domestic Science.

WORK OF THE DEPARTMENTS

FIELD HUSBANDRY.

Farm Crops.

The reader is referred to Bulletin No. 268, entitled, "Farm Crops," issued in January of this year. This bulletin consists of eighty pages and gives information regarding grain, root and fodder crops grown at the College and throughout Ontario. Copies of this bulletin can be obtained from the Department of Agriculture, Toronto. The comparative results from different classes of farm crops are presented in a comprehensive and definite form. For instance, they show that of the different cereals grown under average conditions in this Province barley stands at the head of the list of the small grains in weight of digestible constituents per acre. In this respect oats occupy an intermediate position and buckwheat is at the bottom of the list.

Hay and Pasture Crops.

Of all the different crops produced in the Province it is probably safe to say that one of the most neglected and one in which there is room for great improvement is the pasture crop. What is required is a greater amount of valuable pasture per acre than has been produced formerly. There are too many old timothy sods in the Province and it is well known that timothy makes a comparatively poor pasture in the hot dry summers. It is particularly urged that the farmers give greater attention to the hay and pasture crops in the immediate future. The reader is referred to Bulletin No. 269, entitled, "Hay and Pasture Crops." This bulletin was issued in the present year and contains seventy-two pages. It gives drawings, descriptions and the agricultural value of each of twenty-six varieties of grasses and clovers and also various combinations suitable for pasture and for hay. Copies of this bulletin can be obtained from the Department of Agriculture, Parliament Buildings, Toronto.

Change of Seed.

In some sections of Ontario there is still differences of opinion in regard to the value of the frequent change of seed from one farm to another. Some people are of the impression that it is advisable to change their seed grain very frequently while others are of the firm conviction that satisfactory crops can be grown from the same varieties of crops by continuing for many years without change of seed, providing care is taken with the quality of the seed sown.

An interesting observation can be made from results of work conducted in the Field Husbandry Department at the College within the past thirty years. In connection with the variety tests certain kinds of grains have been grown continuously without change of seed for from twenty-four to thirty years. In experiments which have been conducted at Guelph care has been taken to have the crops grown under as nearly normal conditions as possible. The soil on which these crops have been grown has changed but little in fertility and no commercial fertilizers have been used on the land. The crops have been grown under a four years' rotation consisting of two grain crops, one cultivated crop and a pasture crop. Farmyard manure has been used before the cultivated crop in the four years' rotation. In no instance has the manure been used directly previous to the grain crop. No plant selection has been practiced in the experiment, but good seed has been used throughout. The following gives the average results in yield of grain per acre per annum of each of eight varieties of oats grown without change of seed for the past thirty years and for the past five years, respectively: Egyptian 76.4, 78.4; Bavarian 84.1, 90.7; Black Tartarian 70.1, 72.8; Joanette 83.3, 75.1; Siberian 89.4, 87.7; Oderbrucker 85.9, 87.1; Probsteier 86.4, 89.4; and Waterloo 84.8, 84.8. It will be seen that in the average results here presented in only two instances was the yield for the last five years less than that for the whole thirty-year period. Taking the average of all the varieties it was found that for the past thirty years the yield was 82.6 and for the last five years of the period 83.3 bushels per acre. This shows that varieties of oats can be grown on the same farm for at least thirty years without changing seed from one farm to another, with a possibility of an increase in yield per acre for the last five years in comparison with the whole period of the experiment. It was also found that in experiments with other kinds of grain extending over periods of twenty-four years or more that there was an actual increase in the last five years as compared with the whole period in yield of grain per acre in the case of Common spring wheats and Macaroni wheats. The results of the barley vary somewhat, and in the case of winter wheats the results for the past five years were somewhat less than those for the whole period. In the case of winter wheat in the five-year period it will be remembered that there were at least two decidedly unfavorable years, especially in 1918 when about 56 per cent. of the winter wheat of Ontario had to be plowed up owing to severe winter killing. Of the twenty-eight varieties of grains included in the entire test only ten varieties gave a lower average yield per acre for the last five years than for the whole period from twenty-four to thirty years. These results are exceedingly interesting in showing the possibilities of growing grain in Ontario over a long period of years without change of seed providing the seed sown each year is of good quality. For decided increases in grain production in Ontario other methods than the frequent and indiscriminate change of seed are necessary.

SELECTION OF SEED.

For the best results it is exceedingly important to sow large, plump, sound, well matured seed of high germination. This applies to all classes of grain crops. Extensive experiments have been carried on at Guelph each one of which has been conducted from five to nine years. In every instance the large, plump seed gave a greater yield of grain per acre than medium sized, small plump, shrunken or broken seed. In the average of six classes of grain the large plump surpassed the small plump in yield of grain per acre by 19 per cent., and in the average of three classes of grain the plump seed gave a yield over the shrunken seed of 20 per cent. It should be understood that equal numbers of seed were sown in each instance. It is very evident from the results of this experiment that a large plump seed will produce a larger, more vigorous and more productive plant than that produced from a small plump or from a shrunken seed. Not only do the seeds of the best selections give an increased crop but the grain throughout proved to be of higher weight per measured bushel than that produced from the inferior seed.

SELECTION OF PLANTS.

The selection of seed has a beneficial but temporary influence on crop production. The selection of plants, however, has far reaching results. Many of the varieties which are now cultivated in different countries are the result of plant selection. Some of these have been made by individual farmers, some through the instrumentality of seed houses and others through the means of systematic and careful work at the Agricultural Colleges.

The Ontario Agricultural College at Guelph has introduced a number of varieties obtained through the nursery system of selection which are now used more or less extensively in cultivation. Amongst these are the O.A.C. No. 61 spring rye, the O.A.C. No. 21 barley, the O.A.C. No. 72 and No. 3 oats, the O.A.C. No. 81 and No. 111 soy beans, the O.A.C. No. 71 millet, the O.A.C. No. 114 flax, the O.A.C. No. 2 strain Yellow Leviathan mangel, etc. Some of these are at present grown more extensively than any other varieties in Ontario.

Hybridization.

Even by improving the best varieties of farm crops already in existence those of the highest qualities may not contain all the desirable characteristics to give the very highest returns. Cross-fertilization can sometimes be used to good advantage by combining the best features and eliminating the weaker characteristics of two or more leading varieties of crops. Extensive work has been carried on at Guelph in crossing different varieties of wheat, oats, barley, peas, beans, etc., with the object of securing more desirable varieties than those in existence at the present time. Promising results have been obtained, only one of which will be referred to at this time.

The O.A.C. No. 104 variety of winter wheat originated at the College from a cross between the Dawson's Golden Chaff and the Bulgarian varieties. This new hybrid wheat has surpassed both its parents in yield per acre in the average of the past six years. It has also given higher results than the varieties used in the co-operative experiments throughout Ontario in each of the three years in which it has been distributed.

Financial Results.

It is interesting to study the progress of agriculture in Ontario as revealed through the average yield per acre of some of our principal farm crops. The writer remembers that some seventeen years ago when addressing a meeting in Eastern Ontario, Mr. D. M. McPherson, drew particular attention to the fact that the farms of Ontario were not producing as good results at that time as they had produced twelve or fifteen years previously. The reverse has now taken place, especially in the case of some crops in spite of the fact that with the passing years there is a natural tendency for lower yields owing to a gradual lessening of the fertility of the land unless sufficient fertilizing materials are constantly restored.

The Bureau of Industries for Ontario has collected statistics on crop production in each of the past thirty-six years. If we divide this period into two groups of eighteen years each we find that for the latter as compared with the former period there has been an actual increase in yield of grain per acre of some of our principal farm crops as follows: 20 per cent. for barley, 10 per cent. for oats and 14 per cent. for winter wheat. These increased yields per acre if multiplied by the average market value of the three crops referred to for the five years, from 1913 to 1917, inclusive, would mean an annual increase for the Province of Ontario about as follows:

INCREASED RETURNS TO THE PROVINCE.

Barley	$2,745,938
Oats	5,374,663
Winter Wheat	2,951,012
Total	$11,071,613

This total amount of $11,071,613 represents simply the annual market value of the increases of the three principal grain crops per acre when we compare the last eighteen years with the previous period. It is believed that these increases in yields per acre have been brought about largely through the introduction of new and better varieties.

According to these figures the value of the increases in yields per acre of the barley, oats and winter wheat crops is about fifty-five times as great as the annual cost of the maintenance of the Ontario Agricultural College including the entire expense of the experimental and investigational as well as the educational work of the institution.

In 1918 the value of the oat crop of Ontario was about one hundred million dollars. If it had not been for the increase of ten per cent. in yield per acre of the oat crop in recent as compared with former years, the returns would probably have been only ninety million dollars or about ten million dollars less.

The O.A.C. No. 72 variety of oats is rapidly taking the place of the Banner and of all other varieties in Ontario. In the average of twelve years' results the O.A.C. No. 72 has 3 per cent. less hull than the Banner. This difference if applied to the oat crop of Ontario for 1918 would make a difference of three million dollars in favor of the former variety.

ANIMAL HUSBANDRY AND FARM DEPARTMENT.

FARM HORSES.

Owing to the fact that a tractor is now in regular use on the College Farm fewer horses than formerly are maintained for farm work. The farm is now operated with three horses less than was the case two years ago. A start was made in breeding mares in the spring of 1918, but, owing to the fact that the mares bred were getting on in years and had not been breeding, it was found next to impossible to get them with foal.

Following out the general plan to have as many breeds of live stock as possible on the farm, particularly for class-room purposes, a choice team of five-year-old Percheron mares were added to the horse stock last spring. These mares were imported from the United States and weighed, when they came to the College, nearly 3,800 lbs. Since they arrived each has dropped a good foal (a filly and a horse) and they make a valuable addition to the College stock.

BEEF CATTLE.

The herds of beef cattle maintained on the farm have done well during the year. The Scotch Shorthorns have proved profitable and an effort is being made to increase the herd. Only two females were sold at the annual sale this year. One bull calf sold at the sale made a record price for a young Shorthorn bull from the herd, bringing $740. The value of good foundation stock and of the best available sire is demonstrated in this herd. The foundation for a herd of Aberdeen Angus and another of Herefords laid last year is turning out satisfactorily, and there are now available for class-room work representative animals of these two breeds as well as of Shorthorns. It is hoped that these herds will be increased as time goes on.

Besides the breeding herds a class of extra choice finished steers has been kept for the class-room.

STEER FEEDING EXPERIMENT.

As reported last year, fifteen calves were purchased in August, 1918, and put in a feeding experiment intended to prove or disprove the value of good breeding in beef production. These cattle consisting of three scrubs, three dairy steers, three pure-bred beef steers, three cross-bred steers and three grade Shorthorn steers are now in the stalls at the commencement of the finishing period. They will be sold in April, 1920, and all figures in connection with the work will then be available. These fifteen steers are proving valuable for class-room purposes and students interested in live stock are watching the results closely. Stock like this is necessary to illustrate the good and the inferior types, and its study more and more valuable as the student realizes the necessity of having a working knowledge of commercial live stock.

DAIRY CATTLE.

An effort has been made to clean out the tuberculous cattle from the dairy herd. All the cattle formerly kept in the old isolation barn were destroyed and the barns have been pulled down. The dairy herd is tested every six months and so far a small number of reactors are still found at each test. A good herd of Holsteins is maintained, smaller herds of Ayrshires and Jerseys are also found profitable for class-room and in production. A new herd header was purchased for the Ayrshire herd. He was the Junior Champion at the Canadian National and comes of high-record backing. The Holstein and Jersey sires are recognized as good individuals of their respective breeds and have high-record backing. All the cows in the dairy barn are entered in the R.O.P. and while few have made exceptionally high records the results have been fairly satisfactory on twice-a-day milking.

SHEEP.

Although the summer was dry and hot and pastures were short the sheep flocks did well. No contagious or otherwise serious disease infested the sheep and increases were satisfactory. The lamb crop was very satisfactory giving a 140 per cent. increase in the flock. A noticeable feature of the year's work was the effect of "flushing" the ewes just before the breeding season. The breeding ewes were allowed the run of a rape plot and at the same time had access to old pasture. They were gaining in flesh at the time of service and the percentage of twin and triplet lambs was large.

The wool was marketed through the co-operative system and the average clip per ewe of all breeds was 8 lbs.

Only two breeds of sheep are carried for an extensive breeding purposes, viz.: Shropshires and Leicesters. To the Shropshire flock seven imported yearling ewes and one imported yearling ram were added. The Leicesters are specially selected from home breeding and are sired by the best imported rams procurable and are said to be one of the best flocks in the Province. Besides these, a few Southdowns, a few Oxfords, and some Cotswolds are carried and the College is particularly fortunate in having the privilege of selecting representative Dorsets, Hampshires, Suffolks, etc., from well known breeders and having the use of these for class-room work during the winter months.

LAMB EXPERIMENT.

In the autumn of 1918 a lamb experiment was carried on with 8 ram lambs, 8 ewe lambs and 8 wether lambs. A good case was made out against ram lambs as a feeding proposition, the market discriminating against them to the extent of at least $1.00 per cwt. The following conclusions from the experiment are interesting:—

1. The ram lambs lost a greater percentage in weight during shipment than either the wether or ewe lambs.

2. The highest price was obtained for the ewes. The lowest price was obtained for the rams. The ewes brought more per pound than the wethers for the reason that they were about the proper weight, while the wethers were considerably too heavy.

3. The rams dressed out the poorest, as well as being the poorest sellers. They were coarse in neck and shoulder, and were lacking in finish in the more highly priced cuts.

4. Markets will pay a dividend for well finished lambs. On December 13th—the day the lambs were marketed—the market was dull, quotations for lambs being $14.40. Yet the rams, which were the poorest sellers of the lot, brought $14.25, while the wethers brought $15.25 and the ewes $15.50.

5. Markets discriminate between ram lambs and wethers, accepting rams only at a reduced price. The wonder is that a greater discrimination is not shown, and undoubtedly there would be if it were not for the keen competition among the buyers.

SWINE.

During the year some of the choicest of the young sows at the College were added to the breeding herds of Yorkshires and Berkshires, and these two breeds are being carried along on a constructive breeding basis. To introduce new blood a prize winning Yorkshire boar was imported from England and it is planned to increase the numbers of the two breeds mentioned. Two Tamworth sows have been added to the breeding herds and for the class-room two pens of Poland Chinas, one of Chester Whites and one of Duroc-Jerseys are carried.

A new piggery is in course of construction. It is 127 feet long and 32 feet wide and when completed will increase the accommodation for pigs to such an extent that considerable progress should be possible.

ANNUAL SALE OF BREEDING STOCK.

The annual auction sale of pure-bred live stock was held October 30th, 1919, and was considered by stockmen present a good success. Not so many cattle were offered as formerly and fewer pigs were sold than was the case the previous year but prices were high, particularly for Shorthorns and swine, and the sale went off briskly. Buyers were present in large numbers and the stock was widely distributed in the Province.

The following is a detailed statement of the sale:—

5 Shorthorn bull calves and two heifers brought $2.995.00	Average	$427 85
1 Hereford bull calf brought		340 00
4 Holstein bull calves brought $500.00	Average	125 00
2 Ayrshire bull calves brought $110.00	"	55 00
14 Shropshire lambs and ewes brought $402.50	"	29 03
8 Leicester sheep and lambs brought $232.50	"	29 06
2 Cotswold ram lambs brought $40.00	"	20 00
13 Yorkshire sows (bred) brought $1,225.00	"	94 24
21 Young Yorkshire sows and one boar brought $1,097.50	"	49 88
6 Young Berkshire sows brought $270.00	"	45 00
1 Grade Hereford steer, 15c. per lb.		145 50
1 Grade Shorthorn steer, 17c. per lb.		221 00
1 Grade Shorthorn steel, 16½c. per lb.		198 00

This made a grand total of $7,777.50.

This amount was considered exceedingly satisfactory and the popularity of this annual sale seems to be increasing. A large number of buyers at former sales were in attendance and made new purchases.

The Farm.

Owing to the late, wet spring and the hot, dry summer, spring grains were a very light crop on the farm. Twenty acres of winter wheat gave a good yield and the corn crop of 46 acres was a record for the farm, all the silos being filled and refilled. Hay was a bumper crop but roots were light. Altogether, rough feed is very plentiful but concentrates scarce. The farm is in good condition for the summer of 1920. With the help of the tractor plowing on the average four acres per day, the fall cultivation and plowing was well finished before the freeze-up. About 80 acres have been ridged and the farm goes into winter in first-class condition. Some 300 rods of new fence were erected during the year.

The various sections of the farm are now operated on a four-year rotation—roots and corn, grain, hay, hay or pasture. This should prove a good cleaning rotation and is one well suited to a stock farm of this size.

DAIRYING.

Effect of Lactation Period on Percentages of Fat and Solids not Fat in Milk.

Three cows of each of three breeds—Ayrshire, Holstein and Jersey, were tested for fat and solids not fat weekly during the past summer. The general results showed comparatively high percentages of fat and total solids for the first two or three weeks after freshening, then a gradual dropping in the tests, particularly during the months of July and August, with a gradual increase in the milk solids near the close of the period of lactation. There were, however, some marked exceptions to this general rule, and especially was this true of two of the Holstein cows. The average percentages of fat and solids not fat in the milk of one Holstein cow for eighteen weeks were, respectively, 2.99 and 8.57. The tests for the first two weeks averaged 3 per cent. fat and 9.2 per cent. solids not fat. The tests for the 18th week were 2.7 per cent. fat and 8.2 per cent. solids not fat. Another Holstein cow's milk tested 3.4 per cent. fat and 9.35

per cent. solids not fat the second week of her lactation; 3.1 per cent. fat and 8.85 solids-not-fat in the 19th week, averaging 3.24 and 8.9 percentages of fat and solids-not-fat for the weekly periods between April 14th and August 14th. The third Holstein cow under test was eight weeks in lactation when the tests began. Her tests for the eighth week were 3.4 per cent. fat and 9.2 per cent. solids-not-fat. When she had been milking for 17 weeks, she went dry. Her tests for the 17th week, were 4.9 per cent. fat and 9.5 per cent. solids-not-fat. Her averages for the ten weeks under tests were 3.9 per cent. fat and 9.2 per cent. solids-not-fat. These tests throw light on the question of the reliability of short-time tests, which is under discussion at the present time. Much more work will need to be done before arriving at definite conclusions, but the evidence points to its being an individual characteristic rather than one of breed, as to whether or not the milk tests higher at any particular period in the lactation as compared with some other period. Contrary to commonly accepted opinion, the solids-not-fat varied more than did the percentage of fat, and with all the cows of the three breeds, the solids-not-fat were higher early in the stage of lactation than later.

BUTTER.

The chief lines of investigation with reference to buttermaking were, pasteurization sour cream at temperatures of 140°, 150°, 160°, 170° and 180°F., with and without culture; also with and without adding lime neutralizer before pasteurization. Samples of all lots were sent to the Government grading station at Toronto soon after making, where they were held until October 28th, when they were scored a second time by Mr. Scott, who is in charge of the grading station.

The chief results obtained are:—

1. The higher the temperature used for heating the sour cream, the greater the loss of fat in the buttermilk, but this was lessened somewhat by reducing with lime the acidity to about .3 per cent. before heating.

2. The lots heated to 170°F. produced the best all-round butter, both when fresh and after being held in cold storage for two to six months.

3. Apparently there was no advantage in using eight per cent. culture (starter) as the averages of all scores for flavor were practically the same for the lots with and without culture, added for the purpose of ripening the cream.

4. There was little or no difference in the quality of the fresh butter whether lime neutralizer was added or not to the cream before pasteurizing, but when held for some time in cold storage the neutralized lots were better in flavor and scored slightly higher in total points. These tests indicate that it may be advisable to reduce the acidity of very sour cream before pasteurizing, but it would seem as if the acidity should not be reduced below .3 per cent., otherwise curdling takes place when the cream is heated, causing excessive loss of fat in the buttermilk and particles of curd in the butter which are very difficult to remove.

Tests were made on the effect of working butter more than usual. The results indicate that overworking butter seems to improve its keeping quality. Lots "underworked" lost two points in flavor when kept in cold storage for about three months, while lots of similar butter "overworked" lost but one point in flavor kept the same length of time and under similar conditions. The total points were also greater for the overworked lots both when fresh and when held. The evidence points to the advisability of erring on the side of "overworking," especially for butter which is to be placed in cold storage.

CHEESE EXPERIMENTS.

RENNET VS. MIXTURES OF RENNET AND PEPSIN. The continued scarcity of, and high price asked for, rennet, has made it seem advisable to conduct further tests on the relative values of rennet, pepsin, and mixtures of these for the purpose of cheese manufacture.

A standard rennet was used at the rate of three ounces per 1,000 pounds milk; the mixtures of pepsin, and pepsin commercial preparations were used at the rate of 1½ ounces of rennet and 2 ounces of pepsin, etc. The yield of cheese per 1,000 pounds milk was 89.7 pounds in the lots where rennet alone was used for coagulating the milk, while similar lots of milk coagulated with mixed rennet and pepsin produced 89.55 pounds cheese per 1,000 pounds milk. The average losses of fat in the whey, and the moisture content of the cheese were similar for each lot. The average scores for flavor in the cheese was the same for both lots, but the other points were slightly in favor of the rennet cheese, which scored an average total of 93.17 as compared with 92.4 for the mixed rennet-pepsin lots.

Conclusion. Rennet, where it can be procured at reasonable cost, is to be preferred rather than pepsin preparations, according to these tests, as a coagulating agent in cheese manufacture.

EFFECT OF ACIDITY OF MILK ON RENNET AND PEPSIN SOLUTIONS. The manufacturers of pepsin and pepsin preparations recommend that the milk should contain a higher percentage of acid at the time of "setting the vat" as compared with rennet setting.

Tests were made comparing milks with .18 per cent. of acid and also .19 per cent., using rennet in one vat and various pepsin preparations in the other vat. The yield of cheese per 1,000 pounds milk averaged 92.75 pounds for the rennet lots and 92.3 pounds for the pepsin vats—all set at .18 per cent. acid. There was little difference in the loss of fat in the whey; the average moisture content of the cheese was practically the same for both lots, but the score of the cheese averaged 93.3 for the rennet lots and 92.5 for the pepsin lots. The chief difference was a better texture in the rennet lots.

In tests where the acidity of the milk at the time of coagulation was .19 per cent., the difference in the time of coagulation fit for cutting was reduced from nine minutes at .18 to an average difference of 5.4 minutes, but the yield of cheese was still in favor of the rennet lots—91.3 per 1,000 pounds of milk for the vats set with rennet, as compared with an average of 90.08 for the pepsin lots. The difference in time for coagulation was decreased by increasing the acidity of the milk; but there was a greater loss of cheesemaking material by so doing. The average scores of the cheese were also slightly higher all through for the rennet lots averaging 93.2 out of 100, as compared with 92.4 for the pepsin lots.

Conclusion. Increasing the acidity of the milk did not improve the yield or quality of cheese in the pepsin lots as compared with rennet-made cheese.

EFFECT OF INCREASED TEMPERATURE OF THE MILK AT THE TIME OF ADDING RENNET AND PEPSIN. A temperature of 86°F. has been accepted as standard for many years. In order to note the effect of increasing the milk temperature to 90°F., several tests were made with normal, decreased and increased amounts of coagulating material.

Lots averaging .19 per cent. of acid at the time of setting the vat, were coagulated fit for cutting in twenty minutes when set with rennet at the rate of 3 ounces per 1,000 pounds of milk at 86°; and also in the same time when set with 2½ ounces at 90°F. The average yields of cheese per 1,000 pounds milk were 88.66 pounds when set at 86°, and 89.02 when set at 90° with less rennet. Moisture contents were practically the same for both lots, and the average scores were similar, being 92.9 for the normal lots and 92.7 for the lots set at the higher temperature. These tests were favorable for the vats set at 90° with less rennet. The tests would need to be confirmed before the practice could be recommended, but it is something worth trying in a small way at factories, in order to save on the cost of rennet.

We have usually found that it is necessary to use pepsin solutions in greater volume than rennet for coagulating vats of milk. A standard quantity of good rennet is three ounces per 1,000 pounds milk. To obtain similar results in time of coagulating, when using pepsin preparations we find from 3½ to 4 ounces needed. In order to see the effect of increasing milk temperature to 90° and using 3 ounces of pepsin as compared with 4 ounces of pepsin at 86°, several tests were made with the following results:—

1. Three ounces of pepsin at 90° required an average of 7¼ more minutes to coagulate the vat as compared with 4 ounces at 86°.

2. As in the vats heated to 90° for setting with rennet, the yield of cheese was higher by having the milk warmer at the time of adding the pepsin, averaging .8 pound more cheese per 1,000 pounds milk.

3. The average score of the cheese was .4 higher by setting at normal temperature.

Comparing three ounces of rennet at 86° with four ounces of pepsin added to milk at 90°, the yield was again slightly in favor of the vats set at 90°, but the time of coagulating was eight minutes longer in the pepsin lots and the score of the cheese one point lower as compared with the rennet-made cheese.

Conclusions. The higher temperature of the milk at the time of adding the rennet or pepsin gave an increased yield of cheese, but the quality of the cheese was not quite so good by using 90°F. as compared with 86°F. for the temperature of the milk at the time of coagulating the milk to be made into cheese.

EFFECT OF PARAFFINING CHEESE ON SHRINKAGE AND QUALITY, HELD IN ORDINARY CURING-ROOM AND ICE-COLD STORAGE. Flat cheese, paraffined and not paraffined, weighing about thirty pounds each, made during the months of May, June and July, were weighed at the end of one, two and three weeks, also at the end of one, two and three months. Large cheese were also tested in a similar way. Part of the cheese were kept in an ordinary curing-room for three weeks at a temperature of 60° to 75°F., then moved to ice-storage; and part were placed directly in an ice-cold storage, after dipping, where the temperature was 40° to 45°F. Those paraffined were dipped when made four days. The cheese were scored when from one to three months old.

The chief results were:

1. The flat cheese paraffined, lost in weight during three weeks an average of 1.21 per cent. in cold storage, and lost 1.71 per cent. in the curing-room in the same length of time. At the end of three weeks the lots in the curing-room were moved to the cold-storage. In three months the relative losses in the two lots were 2.96 and 3.6 per cent. respectively, for the lots in cold storage for the whole time, and for part time.

Similar lots not paraffined, and treated in a similar way, lost 2.69 per cent. in three weeks in cold storage; 3.84 per cent. in the curing-room. At the end of three months the losses were respectively, 4.48 and 5.67 per cent. The saving in shrinkage in three months on flat cheese as a result of paraffining, was 1.5 per cent. in cold storage and 2 per cent. when left three weeks in the curing-room and then moved to cold storage for nine weeks.

2. The average score of the paraffined flat cheese in cold storage for the three months was 36.5 for flavor; while those not paraffined and held under similar conditions scored an average of 36.75 out of 40, for flavor. The total scores were, respectively, 91.1 and 92.1—the unparaffined lots scoring one point higher in the average of all scores.

The reverse of this was the case for the lots allowed to remain in the curing-room for three weeks and which were then transferred to the cold storage. There was not much difference in the average flavor of the two series, but the paraffined lots scored an average total of 91.5, as compared with 90.6 for the lots not paraffined. In this case, the quality of the cheese was slightly better by dipping the cheese in hot wax when made four days.

3. The large cheese paraffined, lost one per cent. in three weeks while in cold storage; similar cheese in the curing-room lost 1.8 per cent. in the same time. At the end of three months the per cent. of shrinkage was 1.43 in storage, 3.54 in the curing room. The non-paraffined lots lost 1.8 per cent. in cold storage and 2.7 per cent. in the curing room in three weeks. At the end of three months the shrinkages were 3.5 and 4 per cent. By coating the large cheese weighing from 60 to 70 pounds each, the loss by shrinkage in cold storage during one month was reduced about one per cent.; and in three months, it was lessened by two per cent. When the cheese were held in a curing-room for three weeks before placing in cold storage, there was one per cent. difference in the losses during one month in favor of the paraffined lots. At the end of three months the shrinkages were 3 and 4.0 per cent. respectively for the paraffined and the not paraffined lots. In all cases there was a saving of from one-half to two per cent. by coating the cheese in four days after making.

4. The average quality of the cheese was better in all cases where the large cheese were dipped in hot wax the fourth day after making. There was, therefore, a gain in weight and an improved quality of cheese as a result of paraffining the larger sized cheese. Where cheese are held for two weeks or more before selling or shipping, it would pay to dip the cheese in hot paraffine wax when made from four to seven days. If dipped at once after making and then put in cold storage there is danger of the cheese having what are called "soft rinds." Such cheese are not liked in the trade.

POULTRY.

The work of the Department includes teaching, poultry extension service, breeding males for the breeding stations, and general experiments.

Special effort has been put forth for the past year to try to teach every student how to tell a laying hen from a non-layer, also to estimate whether the hen is a poor or good layer. Such work requires time and a considerable amount of material, but the results should be well worth the effort.

Poultry Extension.

During the last session of the Legislature a special vote was given to poultry extension work. It has been felt for some time that the best method of getting information to the breeders of poultry quickly was to take it to their homes. Particularly is this true with such work as culling the poor laying hens from the good layers. Culling work can be done most satisfactorily from June to September. After September it is much more difficult as the birds are moulting and earlier in the year they have either not started laying heavily or in the spring months nearly every hen lays moderately well, hence it would be a waste of time to cull the flocks. The object of the culling demonstrations is to teach a number of people in each county to know how to tell the good producers from the boarders. It can be easily understood that it would be impossible to cull all the hens in the Province annually but it is possible to teach a few people in each locality how to cull, and these, in turn, can teach their neighbors.

A series of culling demonstrations were undertaken in the Province. These were advertised and arranged for through the Poultry Department together with the co-operation of the Agricultural Representative. Demonstrations were held in practically every county, or in other words effort was made to give a demonstration in every part of the Province rather than cull all the farm flocks in any one county.

Ninety-seven culling demonstrations were given at farm homes. At the demonstrations, 5,947 hens were examined, of which number 2,436 were considered as being cull hens or boarders. This is more than forty per cent. of poor layers. It must be understood, however, that some of these were very old hens. Some of them, no doubt, were fairly productive hens in their younger days, but now have outlived their usefulness as egg producers.

At most culling demonstrations a killing and plucking demonstration was also given. Many people kill and dress their poultry badly, thus reducing its market value.

In connection with all demonstrations opportunity was given the local people to discuss many of their problems regarding poultry.

This work was well received and should, in the opinion of the professor, be liberally supported.

BREEDING STATIONS.

For a number of years several breeding stations have been in existence for the supplying of eggs for hatching to the rural schools. This year an effort was made to inspect and cull each of the stations. During January and February, Mr. Marcellus inspected practically all of these stations. It was comparatively an easy matter to do this when giving lectures at the Short Courses in the counties. The breeding station flocks were used largely for the culling demonstrations during the summer.

This Department has been trying to supply all of the stations with pedigreed males from known, good laying hens. This, in itself, is no small task. There are now more than one hundred and forty breeding stations of Barred Plymouth Rocks. The stations will require for next season's breeding over four hundred and fifty males. To hatch and rear this number of males of one variety from good hens is a considerable undertaking, but it is one of the best methods of distributing the stock through the country.

During the year, 137 flocks for breeding stations have been inspected. Of this number, seven were considered not to be up to the standard required. In almost every flock a few undesirable birds were removed. Each flock will average about 50 birds. Of the 137 flocks, some 24 are in New Ontario.

BREEDING WORK.

This Department has been trying to develop and maintain a strain of high laying Barred Plymouth Rocks. Some work has been done with other breeds, particularly White Leghorns. It requires a large number of birds to do this kind of work.

Work of this nature necessitates a close study of the factors, other than breeding, which may influence the production of eggs. Among the chief of these are the dates of hatching, methods and kinds of feeding and feeds, the weather, and last, but by no means least, is the attendant. Poultry, to do well, require careful attention and where one is obliged to change men frequently, as has been the case during the past four years, the task has not been pleasant.

Below is given the results for Groups No. 1, 2 and 3 of the egg production from March, April, and May hatched pullets for the years 1916, 1917, 1918, and 1919:—

Month	1915–16			1916–17			1917–18			1918–19		
	No. 1	No. 2	No. 3	No. 1	No. 2	No. 3	No. 1	No. 2	No. 3	No. 1	No. 2	No. 3
September	11.4	......	......	41.16	......	......	24.9	......	......	27.0	......	......
October	36.8	8.3	......	53.42	30.5	......	32.45	10.2	......	47.2	23.0	......
November	43.4	24.6	2.37	28.86	40.69	6.53	26.6	30.0	23.3	63.13	48.75	23.9
December	40.6	29.56	7.1	35.04	54.85	18.08	24.17	28.0	48.63	54.9	55.63	44.35
January	52.8	41.8	28.8	45.00	52.7	29.5	18.6	25.73	24.5	32.5	37.0	39.7
February	49.0	44.0	36.5	42.25	51.28	39.0	36.6	39.5	29.0	40.0	43.7	39.2
March	52.8	50.9	55.5	60.35	60.5	35.09	53.13	52.3	42.2	52.5	51.2	52.26
April	55.9	55.1	53.4	58.22	57.55	58.2	41.3	54.0	53.7	61.3	59.5	51.8
May	57.7	57.9	59.4	53.74	41.25	59.87	58.32	51.76	49.82	56.9	56.2	49.06
June	51.3	51.4	47.2	44.5	47.6	41.7	59.0	56.15	49.67	47.5	45.5	52.4
July	45.85	46.69	43.4	36.49	38.17	51.28	48.96	49.9	52.97	49.0	49.0	46.0
August	44.26	48.3	37.1	46.45	40.07	45.52	49.2	43.1	48.9	45.1	43.0	42.16
September	......	40.4	36.0	......	39.32	46 2	......	37.19	40.27	......	31.9	33.4
October	......	......	21.32	......	......	30.88	......	......	30.63	......	......	23.9
Average	164.7	151.7	130.2	165.9	168.6	140.48	143.9	145.34	150.13	175.5	165.6	151.51

EXTRA LIGHTS IN LAYING PENS.

Will hens lay more eggs when the pens are lighted during the long nights of fall and winter?

Last year we started a series of experiments with regard to what would be the outcome of prolonging the day for the laying birds from October to April. In a word, we tried to give the laying birds fourteen hours of daylight. With us electric lights were used, and the pens were kept lighted until about 9.00 p.m. each night from September 21st to March 21st. Lighting early in the morning may be a better plan, but the use of lights at night suited our work better.

Below is given the egg production by months of four groups of birds representing both pullets and yearling hens of two breeds.

TABLE NO. II.—EGG PRODUCTION WITH EXTRA LIGHT IN LAYING PENS.

	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Total	Average per bird
Pens Z 1 and Z 2; 50 April hatched White Leghorn pullets, on lights	664	954	911	691	694	548	336	466	774	357	335	175	....	6,905	138.
Pens Z 5 and Z 6: 50 April hatched White Leghorn pullets, no lights	395	697	642	406	508	839	932	982	953	605	613	312	....	7,884	157.7
Pen Z 0: 30 yearling W. Leghorn hens, on lights	413	460	421	185	169	266	304	365	611	492	475	137	....	4,298	143.
Pen Z 4: 30 yearling W. Leghorn hens, no lights	284	170	88	83	98	299	521	517	491	235	336	177	....	3,299	109.
Pen A 11: 50 May hatched Barred Rock pullets, on lights	....	573	963	615	667	858	589	684	883	634	731	508	316	8,021	160.4
Pen 26: 50 May hatched Barred Rock pullets, no lights	....	131	548	532	415	1,009	851	673	921	637	667	447	310	7,141	142.8
Pen A 1: 50 yearling Barred Rock hens, on lights..	324	543	735	445	415	518	331	513	Pens broken up May 31st.					3,824	76.4
Pen 32: 50 yearling Barred Rock hens, no lights..	247	294	449	211	313	764	500	547						3,325	66.5

In all pens the winter egg production was increased by lighting.

In all check pens where lights were not used the birds were the better producers during the season of the year when eggs were at the lowest price.

The yearling White Leghorn hens and the Barred Rock pullets, on lights, produced more eggs for the year.

The Leghorn pullets, on lights, moulted heavily during the spring and never afterward laid as many eggs as was expected.

For the eight months the two pens of yearling Barred Rock hens the ones on lights did best.

It will be of interest also to note that a large number of eggs through the hatching season were incubated from the yearling White Leghorn hens. Those without lights hatched ten per cent. better on the average. It will also be of interest to many breeders to learn that eggs appear to hatch best at the time the birds are approaching their highest production, and in many cases the hatching power declines in sympathy with production.

ENTOMOLOGY.

INSECTS OF THE SEASON.

After a remarkably mild winter and an unusually late spring, summer began with very hot weather at the end of May. In the course of a few days a marvelous change took place in the aspect of the world about us; the leafless trees were covered with abundant foliage, shrubs and fruit trees put forth their blossoms, and woods and gardens were soon resplendent with flowers. A sudden change of this kind could not fail to have its effect upon insect life; those dormant during the long winter months were aroused to activity, butterflies, moths and beetles emerged from their chrysalis cases, bees and two-winged flies swarmed about the blossoms, cut-worms and plant-lice began their destructive work, earth, air and water were teeming with insect life. There was nothing unusual in this except in the rapidity with which the transformation took place from the lethargy of its winter condition to the activity of summer heat.

PLANT LICE.

As in previous years, no matter what the conditions of heat or cold, moisture or drouth, Plant lice were the subject of numberless complaints and produced many applications for information and methods of control. During the later portion of the summer and early autumn they proved very destructive to cabbages and turnips, field peas and potatoes, while earlier in the season they were to be found on a great variety of trees and cultivated flowers—in all cases these hosts of tiny insects, insignificant as individuals, were busily engaged in sucking out the life-juices of the plants on which they lived.

THE CORN EAR WORM.

Every year there is an outbreak of some injurious insect which had not been noticed for a long time. This year the Corn Ear Worm (*Heliothis obsoleta*) has been found in large numbers in various parts of south-western Ontario and has caused a considerable amount of loss to growers of corn. As indicated by the name, the caterpillar attacks the ears of corn and feeds upon the soft kernels, devouring a considerable number of them and rendering the ear unmarketable; a further injury is often caused by rendering the ear accessible to the development of a fungus disease. The presence of the worm is seldom noticed until it has done much damage and when it is too late to apply any measures of control. In any case it is a difficult insect to deal with, working as it does inside the husk, it is not accessible to any poisonous spray and cannot therefore be destroyed by any of the ordinary methods for biting insects. The caterpillar when fully grown is about an inch and a half in length, and is very variable in color and markings; some are greenish-yellow with dark stripes extending from end to end, others are brown or almost black with the stripes obscured. The chrysalis stage is spent in the ground a few inches below the surface and there it remains during the winter and the moth emerges in early summer. The adult, like the caterpillar, is very variable in its appearance, usually it is dull yellow with dark brown or blackish bands and cross-lines. The only practicable remedy for the insect is to plow the infested field as late as possible in the autumn in order to expose the chrysalids to frost and snow and thus cause their destruction. It is well also to cut off and feed to pigs any ears that are found to be infested. This insect by no means confines itself to corn; in the Southern States it is called the Cotton Boll worm and is one of the most serious pests of this important plant. With us it is occasionally found boring into the fruit of the tomato and it also attacks the buds of tobacco.

COTTON MOTH.

Another southern insect is an occasional visitor to this northern Province. In September a large number of Cotton Moths (*Alabama argillacea*) were observed in several places in Ontario; here in Guelph, at Woodstock and other localities considerable numbers were observed. Previous observations at various times have shown that this moth flies with the aid of a strong south-west wind from its home in the cotton fields a thousand miles and more till it reaches us and feeds harmlessly on the juices of fallen fruit—owing to the absence of its food-plant it cannot become established; the moths perish when the cold weather comes and it may be some years before we have another visitation.

WEEVILS IN STORED GRAIN.

A serious matter is the great increase in the prevalence of weevils and other small beetles in stored grain; in flour mills, granaries, bakeries, groceries and in the farmers' bins these destructive insects are found. The farmer who has held over his grain, in the hope of obtaining a higher price, is sometimes surprised to find when examining the contents of his bin, that the grain is heated and then he discovers that it is swarming with these little creatures and is useless for any purpose except feeding to pigs or poultry. Fumigation with bi-sulphide of carbon or super-heating will kill the pests but will not restore the grain to its former condition. All receptacles for grain should be thoroughly cleaned before the new crop is put into them, and no accumulation of refuse should be allowed to remain where grain is about to be stored, frequent examination of bins and bags should be made and no grain should be left undisturbed for a year or more.

THE ORDINARY INSECTS.

The common insects that trouble the farmer, the fruit grower and the gardener have been with us as usual, but there have been no widespread ravages and on the whole the troubles have been much less than in most seasons. Hardly a complaint has been received this year respecting Cut--worms, White-grubs and Wire-worms; in the neighborhood of Port Hope a band of genuine Army-worms made its appearance but it was purely local and did little damage. Peaches were injured in several places by the Plum Curculio; the Apple Bud-moth and Case-bearers and the Pear Tree Slug were prevalent as usual, but there was a remarkable absence of the Red-humped and Yellow-necked caterpillars. A great variety of insects have been sent in for identification and information respecting methods of control, but none have occurred in sufficient numbers to require particular mention.

INVESTIGATION OF INSECTS ATTACKING VEGETABLES.

CABBAGE MAGGOT (*Chortophila brassicae*). The study of this insect, begun last year, was continued this year. More than 7,000 cabbage plants and 2,000 radishes were used in the experimental plots and all kinds of substances or methods likely to prove valuable were tested; the majority of the plots, however, were treated with corrosive sublimate which had given such good results last year

Unfortunately, from our standpoint, the Cabbage Maggot was very scarce this year at Burlington, where most of the work was done; hence most of our labor was fruitless so far as cabbages were concerned, though considerable data was obtained from radishes, as these were moderately infested by the pest. The tests on radishes showed that corrosive sublimate alone of the various substances used gave good results, though the results were not so good as on cabbage the previous year. Corrosive sublimate applied twice gave an average of approximately 90 per cent. of clean radishes. Rows treated with other substances or left untreated gave from 20 per cent. to 70 per cent. of clean radishes.

To my surprise the radishes treated with corrosive sublimate were not only cleaner than any others but were also much more shapely and of better quality and larger size.

In order to proceed in a more logical manner in determining the best method of using corrosive sublimate, we spent much time in trying to find out how this substance acts. Contrary to what we expected, it was found to be no easy problem. Progress, however, was made and we feel sure the solution can be reached next year as we continue the investigation.

Imported Cabbage Worm (*Pieris rapae*). The abundance of this common green caterpillar which attacks cabbage, cauliflower and turnips led us to make tests of control measures. As the cabbages had begun to head when the tests were made and the caterpillars were then feeding on the heads beneath the protecting outer leaves, it was much more difficult to control them than if treatment had been begun earlier. It was thought that dusting the plants with arsenate of lime and hydrated lime, or Paris green and hydrated lime, would be satisfactory, but such did not prove to be the case. Spraying with tobacco extract and also with hellebore in water likewise proved disappointing. The following, however, were found satisfactory. (*a*) Keating's insect powder, 1 oz. to 2 gallons of water, sprayed directly into the heads of the plants; (*b*) Dalmatian powder, 1 oz. to 2 gallons of water applied in the same way; (*c*) a dry mixture of Paris green and middlings in the proportion of about 1 oz. of Paris green to 1 gallon of middlings. The last remedy was applied by taking a small quantity of the mixture between the first two fingers and the thumb and by a circling movement of the hand scattering it where the caterpillars were feeding in the head. This would seem a slow method but one man or boy can treat an acre of cabbage in a day, and only a few gallons of the material is required for an acre. Moreover, being placed in the protected part of the head no rain can wash it away. This method, however, would not be safe on cauliflower because of danger of poisoning the consumers of these plants. For cauliflower, therefore, Keating's insect powder or Dalmatian powder or the plain Pyrethrum powder which apparently is the chief ingredient of both of these, would be more satisfactory, though not so cheap. These powders kill chiefly by contact.

Onion Thrip (*Thrips fabaci*). Our attention was directed to this insect by the unhealthy appearance of many onion plots. A test was made of Black Leaf 40 at the strength of 1 part to 400 parts of water with the addition of common soap at the strength of 1 oz. to 2 gallons of the liquid. It has been claimed in some parts of the Province that this would not kill the thrips, but evidently it was not well tested, because in our tests it destroyed every thrip it came in contact with. The best method of applying it, however, needs further study.

INVESTIGATIONS OF INSECTS ATTACKING BUSH FRUITS.

IMPORTED CURRANT WORM (*Pteronus ribesii*). In accordance with our plan of making a careful study of all the more important bush fruit insects, the life history, habits and control of this common pest of currants and gooseberries were worked out. It was found that it apparently could not live on black currant foliage and confined itself to red and white currants and to gooseberries. Much data of a desirable and useful character were obtained which will help us in the future in simplifying control measures.

IMPORTED CURRANT BORER (*Sesia tipuliformis*). The life history of this insect has been studied and observations made on the amount of damage done by it in various localities. Control measures have not yet been tried.

BLACKBERRY LEAF MINER (*Metallus bethunei*). This insect has become so generally abundant throughout the Oakville, Burlington and Niagara districts that further attempts to discover a method of control have been tried. No success, however, has yet been obtained, but we have recently learned of two or three promising substances which we purpose testing next year.

SPRAYING EXPERIMENTS.

Testing various substances to retain the foliage on currants. Almost every year the leaves of currant bushes fall before the end of August. This falling of foliage means, of course, that the plants will not be so vigorous or so profitable as they would have been if the foliage had remained on throughout the autumn until the cold weather came. The dropping is due to several causes, the chief of which are usually disease and very hot weather. Tests were made this year with three different kinds of liquid sprays and two kinds of dusts, to see if any of these would be of value in retaining the leaves. The liquids were Bordeaux mixture, lime-sulphur and soluble sulphur; the dusts, the ordinary sulphur-arsenate of lead dust for apples and a Bordeaux-sulphur and talc dust. Of these, Bordeaux mixture and lime-sulphur alone gave favorable results and of these two Bordeaux was very much the better. Currants sprayed four times with Bordeaux retained their foliage in a good healthy green condition well on into October, whereas on check rows it had fallen as early as the first week in August, and on some bushes even before the fruit was ripe. Extensive experiments to test this further will be conducted next year.

Tests of the comparative values of different liquid sprays and dusts for the prevention of apple scab. A six acre orchard of large apple trees at Burlington was used to test the value of lime-sulphur and arsenate of lead, soluble sulphur and arsenate of lime, Bordeaux mixture and arsenate of lime, sulphur and arsenate of lead dust, and Bordeaux-sulphur and arsenate of lead dust respectively against Apple Scab. The work was carefully planned and executed, but the season was so unfavorable for the development of apple scab that no conclusions could be drawn other than those that were already known from previous years' experiments.

INSPECTION OF NURSERIES.

The inspection of nurseries was continued as usual, four men being employed throughout the season. The results of this work are gratifying; for out of approximately 1,250,000 fruit trees only 21 were found infested with San José Scale and destroyed. When one considers that this means only one tree on an average out of 60,000 it shows that our nurseries are now in a very satisfactory condition so far as this dread insect is concerned. The cold winter of 1917-1918 was of course a helpful factor in achieving this result.

BOTANY.

WEEDS.

Analysis of the correspondence during the past 12 months indicates that the following weeds have given the most trouble during the past year. Field Bindweed, Perennial Sow Thistle, Wild Mustard, Bladder Campion and Wild Oats. Among the plants of particular interest brought to the attention of this Department this year, were Aster Dodder, Tansy Ragwort and Dwarf Mistletoe causing Witches Broom on Black Spruce.

Dodder (*Cuscuta sp.*) on the cultivated China Aster was sent in by several correspondents who reported that many of their plants were being ruined by it. Dodder differs from ordinary weeds, in not possessing any leaves. The yellow thread-like stems of the dodder twine around the aster plants and send into their tissues small short rootlets called suckers or haustoria. By means of these suckers dodder robs the Aster plants of their food and finally starves them to death. The yellow threads of the dodder soon spread from plant to plant in a bed so that all the plants may become entwined in a network of yellow threads. Plants affected in this way should be promptly pulled and burnt.

Tansy Ragwort or Stagger-wort (*Senecio jocobaea* L.). This plant was found in Puslinch Township, Wellington County several years ago but since that time until this year has not been reported from any other part of Ontario. This year two specimens collected in Lincoln County were brought to this Department for identification and it appears that this weed is established there on roadsides.

This plant has caused very serious trouble in the Eastern Provinces, especially in Nova Scotia. It is a very dangerous weed, because when eaten by cattle it causes a curious and fatal disease of the liver (*Hepatica cirrhosa*). For this reason farmers in Ontario should keep a sharp lookout for it, and destroy it wherever it appears. It is easily recognized, being a large conspicuous, strong growing plant about two or three feet high. The flowers are in numerous heads in flat clusters, bright yellow in color and very showy. The root leaves are from six to eight inches long, petioled. The stem leaves sessile and clasping, all dark green and are cut and divided, the segments crowded and overlapping, crisped and waved.

Observations on the Dwarf Mistletoe (*Arcenthobium pusilum* Peck) were made by Dr. Stone whose report regarding same is as follows:

"In some swamps near Guelph it has been noticed that the Black Spruce (*Picea mariana* (Mil.) B.S.P.) is not growing normally. Many of the trees are dead and present a bushy appearance. Other trees are still living but in many cases the branches are very thickly clustered and appear like small bushes growing in the tree. A close examination of the abnormal trees shows that they have been attacked by a minute flowering plant, the Dwarf Mistletoe. Wherever this parasite has gained a foothold, the branches are stunted and clustered forming witches brooms. Apparently the Dwarf Mistletoe is rare but widespread, having been collected but once before in Ontario and but few times in Eastern Canada.

PURITY TESTS OF COMMERCIAL SEEDS.

Purity tests according to the standards designated by the Seed Control Act were made on 51 samples of clover and timothy seed.

Out of 26 samples of red clover seed, 8 graded No. 1, 6 No. 2, 3 No. 3, and 9 were disqualified.

Out of 11 samples of timothy seeds, 4 graded No. 1, 2 No. 2 and 5 were disqualified.

Out of 11 samples of alsike seed, 4 graded No. 1, 2 No. 2, and 4 were disqualified.

Three samples of alfalfa seed, all graded No. 1.

Besides the above tests according to the Seed Control Act, purity tests were made of 9 samples of chop and other foodstuffs, 8 samples of sweet clover and 18 samples of lawn grass, grain and other commercial seeds.

PLANT DISEASES.

This spring was exceedingly wet and cold and as is nearly always the case in such seasons peach leaf curl and brown rot of stone fruits were very prevalent in the fruit growing districts of the Province. Peach Leaf Curl was especially destructive, defoliating a large number of trees and in many cases ruining the crop. The results of spraying were very marked. Those who sprayed early and thoroughly with lime sulphur, dormant wood strength, suffered very little loss from curl, while those who sprayed too late, or who did not spray at all had their trees in many cases almost defoliated. In order to prevent peach leaf curl, spraying must be done early in the spring before the buds have started to swell and care must be taken to see that every bud is thoroughly covered. Success depends upon early and thorough spraying. Continued wet weather in the early spring frequently prevents spraying for curl at the proper time. Fall spraying, therefore, has been recommended. Spraying in the fall has been tried in Ontario and satisfactory results obtained. Fall spraying is being recommended because it can be done in a slack season when other work is not pressing and when done provides insurance against weather conditions in the spring so far as curl is concerned.

Leaf Spot or Anthracnose of currants caused by the fungus Pseudopeziza ribis was very prevalent in the Niagara district the past season. This disease in the past has been reported as being most severe on red currants but this year it was just as prevalent and just as destructive to black currants. Experiments conducted by Professor Caesar have shown that this disease can be controlled by spraying with Bordeaux mixture.

European Currant Rust (*Cronartium ribicolum*) was again very prevalent throughout the Niagara district where it appears to be well established.

NEW DISEASES.

WILT OF EGG PLANT (*Nectria ipomoeae* Hals.) was found in many sections of the Province this summer. In the Counties of Essex, Kent, Lambton, Wentworth and Welland it caused very considerable loss to the vegetable growers. In some market gardens practically the whole crop was destroyed by this disease. It was found to be worst in fields in which egg plants had been grown for a number of successive years.

Symptoms: Affected plants become yellowish and sickly in appearance and in several cases the leaves wilt and die. If such plants are examined, brown or discolored areas are seen on the stem near the ground. These may be several inches in length and extend completely around the stem. In wet weather the surface of the discolored area may become covered with a white mould. If affected stems are cut the vascular bundles are found to be discolored.

The fungus which causes this disease lives over from year to year in the soil. In order to prevent a re-occurrence of trouble from this disease vegetable growers are advised to burn the diseased plants and not to grow egg plants on the same soil again for three or four years.

RUST OF STATICE (*Uromyces limonium* (DC) Lev.) is another new disease that was brought to the attention of this Department this year. Statice is a beautiful perennial flower, highly prized by gardeners. Rust proved very destructive to this plant in some gardens this year. The foliage of many specimens was completely destroyed by it. Correspondents were advised to pluck and burn rusted leaves and to try spraying their plants with Bordeaux mixture, 4-4-40 formula, or commercial lime sulphur 1 gallon to 40 or 45 gallons of water.

STEM ROT OF TOMATOES. This disease was observed and reported by Dr. Stone. During the past winter tomatoes in the College greenhouse developed a stem rot which in some cases finally killed 90 per cent. of the plants. The rot in most cases began at leaf scars a foot or more above the ground. Sometimes the diseased areas occurred near the top of the plant. The fungus known as Botrytis was isolated from these areas and plants were re-inoculated with the culture. The species was not determined but did not seem to be identical with that causing the better known timber rot. It is, therefore, possibly a new species and the disease may be considered as a new stem rot.

Since infection takes place only under very humid conditions, thorough ventilation of the forcing houses would seem to be the best way of preventing trouble from this disease.

INVESTIGATIONAL WORK.

During the past year the following research work has been carried on:

Co-operative experiments in weed eradication.

Potato disease investigations in co-operation with Agricultural Representatives.

Plot experiments with potato diseases.

Spraying experiments in the control of late blight of celery.

Experiments to test the spray method of applying concentrated formaldehyde solution for the control of oat smut.

Investigation of the causes and means of control of winter blight or streak on tomatoes.

Studies of the life history of the fungus causing rust of snap-dragon.

Experiments in the control of pod spot or anthracnose of beans.

Experiments in the control of Rhizoctonia or Black Scurf of potatoes.

Investigation regarding production and germination of twitch grass seed.

CO-OPERATIVE EXPERIMENTS IN WEED ERADICATION.

During the past eight years (1911-1919) this Department in co-operation with the Ontario Agricultural and Experimental Union has carried on co-operative experiments in the eradication of weeds. Over 80 farmers co-operated in this work. The weeds experimented with were Perennial Sow Thistle, Twitch Grass, Bladder Campion, Wild Oats, Ox-eye Daisy, Wild Mustard and Chess. Some very interesting and valuable results were obtained. Those who took part in these experiments profited by the experience. In nearly every instance they cleaned the field experimented with and demonstrated to their own satisfaction the effectiveness of the method tried and at the same time their results furnished practical information to others. The practical information gained from these co-operative weed experiments may be summarized as follows:

First.—That good cultivation followed by rape sown in drills provides a means of eradicating both Perennial Sow Thistle and Twitch Grass.

Second.—That rape is a more satisfactory crop to use in the destruction of Twitch Grass than Buckwheat.

Third.—That rape gives much better results in the eradication of Twitch Grass and Perennial Sow Thistle when sown in drill and cultivated than when it is sown broadcast.

Fourth.—That thorough deep cultivation in fall and spring followed by a well cared for hoed crop will destroy Bladder Campion.

Fifth.—That Mustard may be prevented from seeding in oats, wheat and barley by spraying with a 20 per cent. solution of iron sulphate without any serious injury to the standing crop or to the fresh seedings of clover.

POTATO INVESTIGATIONS IN CO-OPERATION WITH AGRICULTURAL REPRESENTATIVES.

This work was undertaken to determine the best source from which to obtain seed potatoes, free from the so-called Physiological disease, such as Leaf Roll and Mosaic, which would give larger yields. With this object in view Green Mountain and Irish Cobbler seed potatoes were obtained from Southern Ontario, Northern Ontario and New Brunswick. The seed from these sources, and, in the experiment this year, some of the farmers own local seed, was planted side by side in plots in nearly every county in Ontario. Two sets of such plots were planted in each county, one set on heavy soil and the other on light. The Agricultural Representatives co-operating with the farmers in their counties looked after the planting, spraying and cultivation of these plots. During the summer each plot was inspected for disease by a member of this Department. The following table summarizes the results of these experiments and shows the average percentage of Leaf Roll and Mosaic, Foreign and Misses found in the plants grown from the seed of the two varieties from the three different sources and in the plants grown from local seed.

SUMMARY OF ALL THE COUNTIES.

No. of plots inspected	408
“ plants examined	81,600
“ farms on which plots were situated	89

Average percentage of Leaf Roll in Irish Cobblers	Northern Ontario seed	.6
“ “ “ “ “ “	New Brunswick seed	.9
“ “ “ “ “ “	Southern Ontario seed	1.8
Average percentage of Leaf Roll in Green Mountains	Northern Ontario seed	.4
“ “ “ “ “ “	New Brunswick seed	.4
“ “ “ “ “ “	Southern Ontario seed	1.4
Average percentage of Leaf Roll in local seed, various	varieties	5.3
Average percentage of Mosaic in Irish Cobblers	Northern Ontario seed	1.0
“ “ “ “ “ “	New Brunswick seed	.7
“ “ “ “ “ “	Southern Ontario seed	.7
Average percentage of Mosaic in Green Mountains	Northern Ontario seed	1.1
“ “ “ “ “ “	New Brunswick seed	.2
“ “ “ “ “ “	Southern Ontario seed	2.7
Average percentage of Mosaic in local seed, various	varieties	.3
Average percentage of Foreign in Green Mountains	Northern Ontario seed	.07
“ “ “ “ “ “	New Brunswick seed	.07
“ “ “ “ “ “	Southern Ontario seed	.15
Average percentage of Foreign in local seed, various	varieties	2.3
Average percentage of Misses in Irish Cobblers	Northern Ontario seed	9.6
“ “ “ “ “ “	Southern Ontario seed	8.4
“ “ “ “ “ “	New Brunswick seed	.14
Average percentage of Misses in Green Mountains	Northern Ontario seed	7.8
“ “ “ “ “ “	New Brunswick seed	12.7
“ “ “ “ “ “	Southern Ontario seed	6.3
Average percentage of Misses in local seed, various	varieties	5.7

EXPERIMENTS TO TEST THE SPRAY METHOD OF APPLYING CONCENTRATED FORMALDEHYDE SOLUTION FOR THE CONTROL OF OAT SMUT.

This, the so-called dry method of preventing oat smut which has been recently tried and recommended by several Experiment Stations of the United States, has many advantages over the old methods, chief among which are greater simplicity, rapidity and ease of application, which should lead to its being widely used if it proves as effective as the older methods. Laboratory experiments conducted by this Department during the last two winters show that the vitality of oats treated by this method is not injured.

The last two summers (1918-19) field experiments were made with this method for the control of oat smut and the results were highly satisfactory. Some 600 bushels of oats were treated. These were sown on ten different farms and in each case some untreated oats were sown for check. No smuts developed in the oats from the treated seed while in the oats from the untreated seed the smut averaged slightly over 5½ per cent. After conducting these experiments on so large a scale, securing uniformly satisfactory results in regard to the prevention of oat smut without any apparent injury to the grain, we feel warranted in recommending the so-called dry formaldehyde treatment for the prevention of oat smut. Directions for this method are briefly outlined as follows:

As the seed is being shovelled from one pile to another each shovelfull is sprayed with a solution consisting of 1 part of 40 per cent. formaldehyde and 1 part of water. This solution is used at the rate of 1 quart to 50 bushels of wheat. A small quart sprayer is a convenient one to use for this purpose. After the oats are treated in this way they are piled in a heap and covered with blankets, canvas or sacks to confine the vapor and at the end of five hours the seed may be uncovered and sown. As the formaldehyde vapor acts as an irritant to the mucous membrane of the eyes, nose and throat, the sprayer should be held down close to the grain and a circulation of air should be provided.

WINTER BLIGHT OR STREAK ON TOMATOES.

Dr. Stone has been carrying on investigations regarding the control of this disease and the following is his report of the work:

During the past year work has been continued on this disease. It has been found that the use of potassium salts and acid phosphates applied as fertilizers combined with careful watering are effective in checking the disease if applied before it becomes very severe. Acid phosphate at the rate of three ounces per plant and potassium sulphate, one-fourth of an ounce per plant if applied at the first indications of the disease will prevent its further development and give largely increased yields. Even when applied in the later stages of the disease these fertilizers increase the yields.

EXPERIMENTS OF POTATO DISEASES.

The following experiments have been undertaken in co-operation with Mr. Murphy, in charge of the potato disease investigation work for Canada.

First.—To determine if and how far, climatic or local conditions induce Leaf Roll.

Second.—To determine if, and how far, climatic and other local conditions affect the recovery of stock affected with Leaf Roll.

Third.—To determine if, and how far, climatic and other local conditions affect the yield of stock diseased with Leaf Roll.

Fourth.—To determine if, and how far, climatic and other conditions induce mosaic, insects being controlled as thoroughly as possible.

Fifth.—To determine if, and how far, climatic and other local conditions affect the recovery of stock affected with mosaic.

Sixth.—To determine if, and how far, mosaic can be transmitted from diseased plants to healthy plants growing in the next row, insects being tolerated but prevented from defoliating the plants seriously.

Seventh.—To determine if, and how far, climatic and other local conditions affect the yield of stock diseased with mosaic.

Eighth.—To test the possibility of eliminating leaf roll by means of roguing.

These experiments have been carried on for only one year and the results so far are not yet such that any definite conclusions can be drawn from them. It will be several years before enough data can be gathered from these experiments on which to base definite answers to the problems undertaken.

Production and Germination of Twitch Grass.

The amount of seed produced by twitch grass and the percentage of seed which will germinate are questions concerning which there is very little experimental evidence. Mr. Wright has been investigating these points and in so doing has examined a very large number of twitch grass plants and made extensive germination tests, both in Zurich germinators and in sand. He finds that while twitch grass produces very little seed, what seed is produced germinates quite freely. The results of Mr. Wright's experiments show that the average number of seeds per spike is 12.8 and that on an average 89 per cent. of the seeds germinate in Zurich germinators and 88.25 per cent. germinate in sand. These experiments show the danger of spreading twitch grass in seed in straw, manure and commercial seeds.

Studies of the Life History of the Fungus Causing Rust of Snap-dragon.

This work has been carried on by Dr. Stone during the past year. Attempts have been made to discover the way in which the fungus is carried over the winter. From several hundred plants grown from seed taken from rusted plants not a single disease seedling was seen, nor did the disease appear in the transplanted plants. Young plants from a strain known to be susceptible, were covered with old, heavily rusted stems that had remained out of doors all winter. No infection was obtained. The conclusion has been reached that the disease is carried over only on living plants in the greenhouse.

Experiments in the Control of Rhizoctonia or Black Scurf of Potatoes.

The objects of these experiments were to see if the amount of Rhizoctonia could be reduced by selecting seed tubers free from the characteristic little black lumps or sclerotia, and what strength of corrosive sublimate and what times of immersion gives the best results in the control of this disease. Selecting tubers free from sclerotia and planting them without any treatment was found to reduce the amount of badly disfigured tubers from 31.1 per cent. to 13 per cent. Seed with sclerotia planted without any treatment with corrosive sublimate yielded a crop of which 31.1 per cent. of the tubers were markedly disfigured by this disease. Immersing seed potatoes in corrosive sublimate 1 part by weight to 1,000 of water reduced the disfigured tubers to 5.2 per cent. Immersing similar seed in corrosive sublimate, strength 1 to 2,000 for two hours reduced the disfigured tubers to 14.1 per cent. Corrosive sublimate 1 to 2,000 for three hours reduced the disfigured tubers to 7.2 per cent., and corrosive sublimate 1 to 1,200 for one hour reduced the disfigured tubers to 8.5 per cent. The results of these experiments show that the seed with corrosive sublimate. For the most satisfactory results, both selection and potatoes showing no signs of little black lumps or sclerotia and by disinfecting the seed with corrosive sublimate. For the most satisfactory results, both selection and treatment should be practised.

PLANT DISEASE SURVEY OF THE TRUCK GROWING REGIONS OF ONTARIO.

In the latter part of August and early in September a trip was made by Dr. Stone through the truck farming regions of the Province. Truck farms were visited in the following counties: Lambton, Kent, Essex, Norfolk, Welland, Lincoln, Wentworth, Work, Peterborough, Frontenac and Carleton. In each of these counties field meetings were held which were attended by many of the growers in the neighborhood. At these meetings plant diseases were pointed out to them and methods of prevention were discussed. A Dominion Entomologist was also present and discussed the insect troubles. At each meeting there was an average of thirty growers so that more than 400 growers were reached in this way.

The past summer was very hot and dry so that there were very few epidemics of vegetable diseases. In most counties insect troubles were more prominent. The following diseases were noted: On tomatoes, Mosaic, Blossom end rot, Leaf Blight; on egg plant, Wilt. This disease was fairly common in many sections showing as high as 100 per cent. loss in some cases. On peppers, Mosaic, fairly common; Anthracnose, a little. On tobacco, Leaf Spot, Root Rot and Mosaic. This latter disease was almost wholly absent on plants grown from local seed but was present to a considerable extent on plants grown from southern seed. On potatoes, Tip Burn was very bad in all Southern Ontario. Leaf Roll and Mosaic were not bad except where the grower had planted his own seed for several years in succession. New Brunswick and Northern Ontario seed was being used by many men and gave 30 to 40 per cent. better yields than did the Old Ontario seed. In Wentworth County around Hamilton, common scab and Black Scurf or Rhizoctonia were very bad, scarcely any potatoes on the market being clean. Beans were very free from disease, scarcely any anthracnose or bacterial blight being observed. On cantaloupe, Sunburn or scorch killed the older leaves. The chief trouble was bacterial wilt, this was observed in a few fields. In some cases the loss ran as high as 30 per cent. On asparagus, only a few plantations were seen in which there was any rust. On celery, only two fields were seen in which late blight was present to any extent. The most common and troublesome disease this year was bacterial rot. This seemed to follow insect injury.

BACTERIOLOGY.

A study of the yeast and mold content of butter, work upon which was commenced last year, has been carried on again during the present season.

Yeast and mold counts of 285 different lots of butter have been made, samples being secured from the following sources:

Experimental churnings, Dairy Department, O.A.C.	46
Provincial Butter Grading Station, per Mr. Scott	192
October entries, Dominion Scoring Contest, Montreal, per Mr. Barr	30
"All Canada" Scoring Contest, Winnipeg, per Mr. Gibson	9
Miscellaneous samples	8

Our object in carrying on this work has been to secure information on the following points:—

1. Yeast and mold content of raw vs. pasteurized cream butter.
2. Efficiency of creamery pasteurization and extent of re-contamination of pasteurized cream butter as indicated by yeast and mold counts.
3. Relation of yeast and mold content of butter to flavor and keeping quality.
4. Comparison of yeast and mold counts of butter with findings of the Storch test.

Details of the present season's work will be published in due course in bulletin form.

MOLDY BUTTER IN CREAMERIES.

During the latter part of August a visit was paid by Mr. Lund to several creameries in Eastern Ontario where trouble with moldy butter had been experienced during the summer months. Recommendations were made in each case, which, if acted upon, should result in the elimination of trouble from this source.

BACTERIAL ANALYSIS OF SOILS.

In connection with the soil survey work carried on by the Department of Chemistry a bacterial analysis of 46 samples of soil representing 17 soil types was made. The purpose of the analysis was to determine the relative bacterial and mold content of the different samples. Separate determinations were made of the surface soil and subsoil of each sample in three different culture media.

It was found that Azotobacter, the principal nitrogen-fixing species of soil bacteria, were present in nine of the seventeen soil types and in twenty-two out of the twenty-nine soil samples that represented these nine types. In these were included all the loams except one, a shale loam.

In these soils the fixation of atmospheric nitrogen by the azotobacter would be constantly going on so long as conditions were suitable.

On the other hand no azotobacter were found in the remaining eight soil types which included the sand, peat-muck and shale soils. In all probability the light sandy soils had not sufficient organic matter present and the peat-muck and shale soils were too strongly acid to favor the development of the azotobacter nitrogen-fixing bacteria. Azotobacter will not grow in the presence of even small traces of acid.

It was interesting to find that *Ps. radicicola*, the legume root nodule bacteria, was present in every soil type except one, a yellow sand. In most cases the subsurface sample had a higher Ps. radicicola content than the surface samples.

In general, the soils that were favorable for azotobacter had the higher radicicola counts, but the fact that fairly high radicicola counts were obtained in the peat muck and shale samples, which were too acid for azotobacter, would indicate that some varieties of the legume bacteria, at least, had a fair toleration for acid soils. We could not determine, however, from a bacterial culture examination what different varieties of legume bacteria were present as the different varieties are determined only by inoculation tests. Therefore, we cannot say whether or not all varieties of legumes could be grown satisfactorily on these various soils without previous legume bacteria inoculation.

With regard to those species of bacteria responsible for plant food digestion in the soil it may be said that with the exception of two light sand samples and a silty loam, each of which had a very low bacterial count, all samples had a fair bacterial content for arable soils. The shales in general had as high a total as the loams. This would indicate that while the shales and peat-muck soils examined were not suitable for the nitrogen-fixing azotobacter they were about equally suitable with the loams for the species of plant food digesting bacteria.

Investigational studies in connection with the life history, morphology and histology of certain azotobacter isolated from College soils have been carried on.

BACTERIAL CULTURES FOR LEGUME SEED INOCULATION PREPARED AND SENT OUT.

A total of 1,999 cultures of legume bacteria for seed inoculation were prepared and sent out, made up as follows:

Alfalfa, 1,018; Red Clover, 331; Sweet Clover, 281; Field Peas, 197; Alsike, 90; Beans, 20; Soy Beans, 20; Sweet Peas, 18; Hairy Vetch, 16; Mammoth Clover, 3; Crimson Clover, 1; Sanfoin, 1.

LACTIC CULTURES PREPARED AND SENT OUT.

A total of 63 lactic starters and 11 Bulgaricus cultures were sent to creameries, cheese factories and other applicants.

SPECIMENS RECEIVED FOR EXAMINATION AND REPORTED UPON.

The following diseases and abnormal conditions were found in specimens submitted to us from various parts of the Province for examination:

Poultry.

Bacillary white diarrhœa	1 chick.
Bumblefoot	1 hen.
Black atrophy of ovary	Tumor from bird.
Coccidiosis	1 peacock, 1 pea hen, 3 chicks.
Congestion of blood vascular system	1 hen.
Congestion of lungs	2 pullets, 5 chicks.
Egg bound	3 hens.
Enteritis (in most cases due to poisonous irritants in feed)	12 hens, 1 swan, 5 pullets, 5 chicks, 3 cocks, 3 ducks, 2 cockerels.
Fibrona	1 hen.
Fatty degeneration	7 hens.
Fowl typhoid	1 hen.
Gleet	1 pullet.
Hypertrophy of liver and spleen	1 cock.
Liver trouble	1 chick.
Limberneck	1 pullet.
Malnutrition	1 hen.
Over-feeding	4 pullets, 3 hens, 2 chicks.
Peritonitis	4 hens.
Pneumonia	2 chicks.
Fox	Head of hen.
Rheumatism	1 cock.
Roup	3 hens.

Rupture of blood vessel	1 hen.
Sarcoma	1 hen.
Syncope	1 chick.
Tuberculosis	13 hens (flocks from which these were secured all badly infested).
Tumor	Material from 1 hen.
Weak heart	1 chick.

Cattle.

Tuberculosis	Cervical gland from cow—positive.

Swine.

Tuberculosis	Specimen of pork—positive.

Other Animals.

Poison	1 rabbit.
Coccidiosis	1 rabbit (numerous deaths from this disease in hutch from which sample was sent).

Human.

Diphtheria	1 specimen—positive.
Tuberculosis	6 specimens, 2 positive, 4 negative.

Plant Diseases.

Soft rot of celery	1 sample.
Corn plant	Smut.

Farm Well Water.

Condemned for contamination	43 samples.
Passed as fit for consumption	10 samples.

Milk.

Bacterial counts	9 samples, 1 sample condemned.
Ropy	1 sample.

Butter.

Bacterial count	1 sample whey butter, 1 sample ordinary butter.
Yeast and mold count	1 sample butter.

Miscellaneous Specimens Submitted.

Silage	Bacterial count, 2 samples, putrefied.
Honey	Nothing abnormal.
Canned corn, soured	Bacterial count.
Corn dust for feed	Bacterial count.
Hamburg steak	Putrefied, high putrefactive lacterial count.

AGRICULTURAL EXHIBITIONS.

Morbid specimens of various bacterial diseases of animals and plants, enlarged photographs, text matter, contaminated milk specimens and other bacteriological preparations were made for and used at a number of agricultural exhibitions for educational purposes.

A circular on "Home Pasteurizing of Milk, Particularly for Infant Feeding" was published, and a considerable number of articles contributed to the press.

PHYSICS.

Practical Assistance Offered by the Department.

To those who are interested in the various operations included under the following heads, the Department of Physics is prepared to supply information, and where possible give assistance upon application being made for the same.

The list is as follows: Installation or operation of:

(1) Hydraulic rams.
(2) Lighting systems.
(3) Sewage disposal plants.
(4) Lightning protective devices.
(5) Use of insulating materials in connection with cold storage plants, and protection of bees under extreme weather conditions.
(6) Tile drains or open ditches, and ditching machines.
(7) Tractors for farm power operations.
(8) Cement tile manufacture.
(9) Mechanics of farm machinery.
(10) Soil analysis, where analysis only for structure, moisture conditions, and texture are required.

The Department is also prepared to solve problems in connection with any of the above mentioned branches of Farm Engineering, whenever these problems cannot be more easily dealt with by direct contact with the manufacturers of the above mentioned machines, engines or devices.

Two other items might have been included in the above list, namely:

(1) Locating underground streams or sources of water supply.
(2) Methods of dealing with wells which have become contaminated by reason of seepage from sources of contamination. Special attention will be given these in paragraphs which follow.

Short Courses.

During the Winter Term short courses are given in Farm Power and Tractor Operating; also in Drainage and Drainage Surveying. Both of these, in past years, have proved of great practical value to those who have attended the classes, and demonstrations in connection with these courses. Information concerning courses, and enrolment may be had upon application personally, or by mail, to the President's Office.

Hydraulic Rams.

As a source of power for the pumping of water, it may be stated that in hundreds of cases throughout the Province advantage is not being taken of the running water supply in the form of rivers, springs, etc., which is at the disposal of the farmer. The hydraulic ram is one of the least expensive and most reliable machines which can be installed in connection with the pumping of water from various sources, to points at higher levels, where it is needed for household or other domestic purposes. The Physics Department will be glad to give advice *re* the advisability of installing such plants, under the various conditions which will necessarily obtain in the individual cases brought to their attention.

LIGHTNING PROTECTIVE DEVICES.

Scores of applications are made annually to the Department for instructions as to the proper method of installing lightning protective devices. As yet no official inspection is being made where buildings are being rodded, and as a result much careless work is being done. We hope that, in the near future, legislation will be enacted to enforce competent inspection of rods and earth connections where buildings are rodded, and thus prevent the hundreds of thousands of dollars loss annually occasioned by defective rodding. Inspection should be made at the time of installing the rods, and at successive intervals of say five years after the first official inspection has been made. Until the much to be desired conditions stated in the preceding paragraph are established, we give here for the guidance of those who are intending to install a rodding system the following summary of directions for rodding.

Drawings purporting to show how to rod buildings are omitted. The proper method can only be decided after a close examination of each building in question, for then alone can one intelligently apply the principles already dealt with.

1. KIND OF RODS.

Material—Copper, aluminum or galvanized iron, preferably the first because of durability. Aluminum may prove equally durable. Combinations are not advised, because not as durable as single-metal rods.

Weight—Copper—At least 3 ounces per foot. Aluminum—At least 2¼ ounces per foot. Steel (iron)—At least 4½ ounces per foot.

Form—Any form that will give durability and convenience of installation.

2. GROUND-CONNECTIONS.

Depth—Down to perpetual moisture. At least 8 feet deep.

Number—On an oblong building, at least two. On an L- or T-shaped building, at least three. On a U-shaped building, at least four.

Location—Preferably at opposite corners, though this may be modified to avoid manure, or to go down near conductor-pipe or other metallic portion of the structure. If conductor-pipe is on the side of the building the ground rods should be at the corners as above stated, the eave-troughs connected to it, and then the conductor-pipe also grounded.

Ground-rods should not be bunched, but should be distributed as well as possible.

Method—In deep soil drill a hole at least eight feet deep and run cable down.

In shallow soil, attach cable to metallic ground-plate, which is put down as deep in soil as possible; or run it into a well or stream or a crevice in the rock. If none of these are feasible, put cable as deep as possible and lay large, flat stone over it.

Caution—Be present, and see that ground-connections are properly made. The rest of the system may be inspected at any time, but the groundings only when they are being put down.

3. SYSTEMS.

Run cable from ground up corner to eave, thence to ridge, along ridge to other end, thence down to eave, thence to other ground, making a complete circuit. All cables should be connected in one system. No stubs or dead ends should be left ungrounded. Caution—Cables should be protected from ground six or eight feet up by nailing boards around them.

4. ATTACHMENT.

Fasten cable to barn with nails, staples, clips or metal "dispersers."

Caution—Do not use insulators.

5. POINTS.

Number—20 to 30 feet apart.

Location—On ridge, first ones not over five feet from end.

On or beside chimneys or cupolas.

On dormers. Also on silos.

Height—Eighteen inches, except those on or beside chimneys, cupolas or similar prominences; these must extend at least eighteen inches above the highest part.

Form—Strong tubes, of same weight and material as rods.

6. METALLIC PORTIONS OF STRUCTURE.

Roof-gutters—Top connected to rod, and bottom grounded.

Eave-troughs and Conductor-pipes—Free end of eave-troughs connected to rod, and conductor-pipe grounded.

Hay-fork Track—Both ends connected to rod.

Tanks—Connected to rod above, grounded below.

Windmill—Connected to rod above, shaft grounded below.

Metallic Roof—Grounded at two or four corners, not from peak under any consideration. Points should be used on the ridge and other prominences.

7. WIRE FENCES.

In Field—A grounding at least every twenty rods.

In Yards—At the four corners.

At Building—Ground at first post from building.

Weight of Groundings—Equal to three No. 12 or one No. 9 wire.

How Made—Stapled on posts in contact with all wires of fence, and extending at least three feet in the ground, and projecting above fence.

8. SHADE TREES—Protect where feasible.

Letters received in connection with this branch of farm engineering or management will receive special attention. Inquiries relative to the probable efficiency, or inefficiency, of systems already installed in the Province of Ontario will be appreciated by the Department, as the investigation *re* the rodding of farm or other buildings is still being carried on though the efficiency of properly installed rods is a practical certainty.

LIGHTING SYSTEMS.

In the last few years the beneficial effect of extended periods of illumination on egg production during the winter months (when under normal conditions prices are highest) has been proved conclusively. This special feature in farm management, combined with the ever increasing demand for better artificial lighting in houses and other farm buildings, brings the practice of artificial illumination nearer to the top on the list of farm engineering problems. Various systems are advertised by the advocates of these various systems of lighting, and also by manufacturers of lighting products. Inquiries as to the first cost, efficiency, maintenance, operating, etc., of the various systems will be attended to by the Department.

SEWAGE DISPOSAL.

The subject of sewage disposal is very fully and efficiently dealt with in Bulletin No. 267 of the Ontario Department of Agriculture, which may be obtained directly from the Department of Agriculture at Toronto, or by addressing the Ontario Agricultural College, Guelph. Further inquiries *re* sewage disposal will be replied to promptly if application is made to the Department concerned.

COLD STORAGE.

Bulletin No. 207, treating with Ice Cold Storage on the Farm, is being revised in view of the fact that cold storage, in the case of small cold storage plants, was not covered as fully in the first issue as the demand for such warranted. The paragraphs which follow deal with recent research work carried on in the Department in connection with insulating materials and their uses on the farm.

RESEARCH WORK ON INSULATING MATERIALS.

About two years ago we started experiments in the laboratory to ascertain the relative insulating value of the several materials named below. The reasons for undertaking these tests were:

(1) To get first-hand information, as we found that there was very little available data in regard to the relative value of these substances as insulators.

(2) The information acquired and experience gained in carrying on the work would be invaluable in our lectures, and discussions on Cold Storage with the students.

(3) The number of requests from farmers chiefly for such information was annually increasing. About this time we found that the beekeepers, for instance, were adopting the outdoor system of wintering their hives of bees in insulated cases, and they wanted to know what was the best material to pack between the cases and the hives in order to maintain the temperature in the hive at a suitable point.

MATERIALS TESTED. The various materials tested were: Very fine black re-granulated cork, coarse black re-granulated cork, granulated cork (natural color) such as is used in packing material for imported grapes for instance, another grade of cork (natural in color) and similar to the preceding one but a little coarser in grain and lighter in weight, sawdust, planer shavings, chopped straw, forest leaves, and ordinary excelsior used in packing cases.

Results. Briefly, we found that the very fine black re-granulated cork had the highest value as an insulator, i.e., it resisted the flow of heat through it better than any of the others. If we take it as the standard and assign to it a value of 100, the other materials arrange themselves as follows:

Chopped straw	86
Coarse black regranulated cork	85
Forest leaves	84
Granulated cork similar to that used as packing for grapes	84
Granulated cork similar in colour to preceding one but a little finer and lighter	80
Sawdust	68
Excelsior	60
Planer shavings	60

PROPERTIES OF A GOOD INSULATING MATERIAL.

(1) *First of all the material must be a poor conductor of heat,* but there are other properties that must not be overlooked by any means.

(2) *It should be easy and agreeable to handle.* The fine re-granulated cork is certainly a poor conductor, but no one would care to handle it very much, as it is extremely dusty and unpleasant. Any of the others would be better in this respect.

(3) *It should stand up well in the wall.* Sawdust is a better insulator than planer shavings, but in actual practice the latter is superior since it is elastic and therefore does not settle in the wall and leave an open space at the top to let heat pass through.

(4) *It should be a poor absorber of moisture.* Planer shavings are better in this respect than sawdust. If an insulation becomes damp it loses a lot of its value as an insulator, and furthermore will soon deteriorate and rot.

(5) *It should be reasonably cheap and easily obtainable.* Such is the case with sawdust and shavings.

(6) *It should be durable and easily put into the wall.* The various grades of cork are the best in this respect.

(7) *It should not be attractive for rats and mice, as they would soon destroy it.* For example, chopped straw.

From most of these standpoints, the granulated corks are the best, but they are the most costly. Next to them we would recommend a good quality of planer shavings; next a good quality of sawdust, dry and from well-seasoned woods as basswood, and pine. Chopped straw and forest leaves would give very good results for a time, or while they would stand up. It will be seen that many factors besides insulating value must be considered before deciding upon material to be used in any particular case.

Some of the uses of these materials to-day are the following:

(1) Insulating cold storage buildings.

(2) Insulating milk or cream tanks.

(3) Packing for beehive cases—useful both summer and winter.

(4) Insulating ice storages and refrigerators, and for packing around ice in the storages.

(5) Insulating fireless cookers.

(6) Insulating water and steam pipes.

Anyone interested in insulating materials for any of these various uses should first write us giving the circumstances. We will freely give advice not only as to the best material to use, but also the amount, i.e., in this case the thickness to be put into the wall.

SOIL ANALYSIS.

Of late, scientific investigations are bringing to light the fact that sufficient emphasis has not been laid on the mechanical treatment of soil, and therefore the physical condition of the soil is frequently not up to the mark. A chemical analysis of a soil surely reveals much as to the plant food in the soil, but since the availability of the food to the plant depends very largely on the physical condition of a soil, more emphasis should be laid on the physical analysis than has been the case in the past. In this connection we are not using the term physical analysis to mean simply the separation of the soil into its grains of various sizes for the purpose of determining its texture and class, but also a study of the soil from the standpoints of structure or arrangement of soil particles, drainage, water-holding capacity, aeration and its ability to render up to the plant the food it needs at all times. The soils that require special treatment in order to secure these desirable conditions are the heavy ones, and it has been proven both scientifically and practically that the granular or crumb condition in such soils is the ideal one. This can be secured only by judicious handling of the soil—plowing and cultivating it only when the moisture content is right, keeping it well drained, exposed favorably to the winter frosts, liming it, using a rotation of crops, and supplying plenty of organic matter either as green manure or turning down green crops.

Information *re* the taking of samples, description of moisture conditions, and other data will be sent upon application. This information is to be obtained from those sending samples in order that the analyst may make a full and complete report on samples submitted to him for test.

WATER SUPPLY.

About two hundred applications for surveys for water supply are on file, and to date the Department has not been able to deal with these satisfactorily. The apparent refusal of the Mansfield Water Finder to give satisfactory indications where the presence of water supply is known to exist, has so far been the cause of the above state of affairs. Conditions such as obtain in the districts from which these applications have come have so far baffled the instrument and operators. Satisfactory results have, however, been obtained in regions where different rock formations exist, and hope is still entertained that the Mansfield Water Finder will still prove a success in Ontario. Until further notice, however, the Department is not prepared to make surveys for water in regions where difficulty in obtaining water supply is being experienced. This statement is intended to correct the false impression given in Bulletin 267, page 7, *re* surveys by means of the Mansfield Water Finder.

In connection with the giving of information relating to the methods for cutting off seepage from sources of pollution in the case of dug wells or springs, the Department is finding it extremely difficult to give satisfactory advice. Until it is possible to get first-hand information by tests made by the Department, it is almost impossible to answer the questions which daily come up for consideration. Rules for prevention of contamination of water sources are given in Bulletin No. 267, and if the precautions there listed are taken, little trouble should be experienced in keeping the water supply pure and free from intestinal or other harmful bacteria.

PROBLEMS SOLVED.

Problems relating to farm engineering included under the following heads will, when submitted, be solved by the Department.

(1) Pulleys—their size, speed, and construction.

(2) Use of belting; size of belts required for transmission of power under specified conditions.

(3) Traction—draw bar pull, work performed by engines of various horse-power.

(4) Sizes and horse-power of tractors required if used for various purposes, such as plowing, threshing, filling silos, etc.

(5) Values of different grades of lubricating oils for various purposes.

(6) Best form of pumps to be used in connection with lifting or forcing water to various heights.

(7) Cement or concrete testing; also testing of tile for drains, culverts, etc.

(8) Heating, or ventilation of farm houses or other buildings.

(9) Manufacture of concrete tile; thick walled versus thin walled tile for drains; reasons for the efficiency or lack of efficiency in concrete tile.

These and related problems are being daily dealt with in the Department; and the submitting of such problems aids materially in mapping out a continually changing course of study for the students enrolled in the classes in Physics at the Ontario Agricultural College, Guelph, Ontario. This changing of the course of study is intended to meet the changing needs of the agricultural industries of the Province.

BEES.

FOUL BROOD.

During the past year much evidence has been brought to the attention of this Department regarding the spread of both American foul brood Bacillus larvæ and European foul brood Bacillus pluton throughout the Province.

In 1907, European foul brood was found in Northumberland County and so far as evidence shows, this was the only outbreak at that time. We have now positive evidence to show that European foul brood is present in twenty-two Counties and will undoubtedly spread to other counties. With our present information, there is only one remedy for the control of this disease, that is, the introduction of a young Italian queen from a resistant strain into a colony, made strong, and supplied with an abundance of stores.

The demand for Italian queens has far exceeded the supply, so that for the past two years many beekeepers have been unable to secure queens. This has made it impossible for the apiarists to re-queen ahead of the European foul brood and so escape its bad effects. Where black or hybrid bees are kept, the disease becomes epidemic in the apiary and vicinity, and the loss of colonies is often one hundred per cent. in one year.

The spread of American foul brood has been largely due to the moving and selling of disease infected colonies, also due to robbing or transferring of infected material from colony to colony and apiary to apiary. At the present time there is no clause in the Foul Brood Act which will prevent the movement of colonies of bees or used apiary supplies, without a certificate, and as many beekeepers do not recognize the disease, the danger is often unknown, and disease carried into localities where it did not previously exist.

Demonstrations.

During the season of 1919, thirty-nine apiary demonstrations were held, 727 apiaries have been inspected, and 297 apiaries found diseased.

Supplying Queens.

Italian queens were supplied through the Secretary of the Ontario Beekeepers' Association, whose office is at the College. Many orders were refused owing to the inability to secure the queens.

The College apiary of fifty colonies was re-queened with daughters of two heavy producing queens, supplied by successful commercial beekeepers. It is hoped to continue this re-queening every year, from the heaviest producers which combine other desirable characteristics and qualities.

FARM MANAGEMENT.

During the months of November, December, January and February the data obtained in 1918 by the Farm Business Survey of the dairy counties of Oxford and Dundas was tabulated, and conclusions were drawn. The findings were published in bulletin form. To each of the 777 farmers from whom these data were obtained there was sent an itemized schedule of his own business and by means of comparison with successfuly organized farms the weak and strong features of each farmer's business were pointed out. This method of bringing back to the individual definite suggestions regarding his own business met with a very favorable reception by the farmers and helped materially in procuring their continued co-operation and support. Moreover, by means of a large number of meetings held in Oxford and Dundas, great care was exercised in giving a complete explanation of the conclusions and findings of the surveys.

During this year the survey work was doubled in its scope. The original surveys of Oxford and Dundas were repeated. There was commenced in March, 1919, an investigation into the business of 385 Middlesex County farms engaged largely in beef-raising and in May a survey of 350 mixed farms in the Counties of Dufferin and Peel was commenced. The field work of all four surveys has been completed and the findings and conclusions will be ready for publication early in the new year.

During the months of September and October this Department in co-operation with the Board of Commerce and the Ontario Milk Producers' Association was enabled to evolve a price for milk for city supply satisfactory to producer, consumer and the Board of Commerce. The information gathered in the Dairy Surveys was invaluable in this work.

Instruction. During the summer of 1919 the Department prepared a course of lectures in Farm Management based largely on the investigation work accomplished. This course includes Farm Book-keeping, Farm Accounting, analyses of farm business and a study of the principles underlying the successful organization of Ontario farms. The instruction was commenced with all four years in the regular College course and as our basic data and knowledge of farm business conditions grow, this course can be expanded and improved until it becomes an important part of the College curriculum.

ENGLISH.

In the courses of study in Literature and Composition no changes have been made during the past year, but with the increase in numbers of students in the first and second years some reorganization of work will be necessary in the near future. With a view to reorganizing the course of study, I have this fall made an inquiry as to the proficiency in English Composition, of students entering the First Year. At the beginning of the term I read compositions from all the students of the first year and graded them into four classes, A, B, C, D. Those graded A can write fairly satisfactory sentences and paragraphs. Those graded D are below the standard of entrance to High Schools. After grading these compositions I made a further inquiry to see what previous education these students had had, and as a result I divided them into four Groups:

Group I. Students holding matriculation or teachers' certificates.

Group II. Students who have attended High School but who obtained no certificate.

Group III. Students who have never attended High School. These students, I find on inquiry, have been out of school, on an average, six years.

Group IV. Students from English Schools or Colleges.

The following table shows how the students from each group were graded with respect to composition.

—	Class A.	Class B.	Class C.	Class D.	Total.
Group 1	24	19	6	2	51
Group 2	28	49	23	29	129
Group 3	4	19	15	36	74
Group 4	7	3	3	1	14
Total	63	90	47	68	268

The result of this inquiry shows, as one might expect, that the greatest weakness in English exists among students who have never attended the High School and who have been out of school for some years. In reorganizing our courses an effort will be made to give special attention to these students. In the meantime I am preparing a booklet, or bulletin, written in simple untechnical language, on "Self-Criticism in English Composition." This should be of some help to weak students.

Books, Pictures and Music.

Last year, it will be remembered, the Department of English prepared a bulletin on "Books on Agriculture and Household Science." During the past summer I have been preparing a bulletin on "Books, Pictures and Music for the Farm Home." This bulletin is nearly completed, but it takes much time to gather the necessary data for it. It will be ready for publication shortly.

Debates and Plays.

I am at present conducting an extensive inquiry, for the Experimental Union, on "Debates and Plays in Rural Communities." I have sent out questionnaires to nearly 1,400 rural organizations, and am making inquiry of all the Agricultural Colleges in the United States as to the work that is being done by them in providing suitable plays. As a result of this questionnaire I am receiving scores of letters from all parts of the Province asking for assistance with debates and plays. The Department of English will be glad to answer inquiries and will endeavor to give every assistance possible to these communities.

In our course of study in the English Department (which includes French) a very important change has been made this year, which should have far-reaching effects. A course in the Science of Education has been established, and students in the Third and Fourth years are permitted, under certain conditions, to take the Science of Education instead of French. Out of 97 students in the Third year 73 have this year chosen the Science of Education and 24 have chosen French. Out of 59 students in the Fourth year 47 have chosen the Science of Education and 12 have chosen French. The object of this course is to provide training in methods of teaching, for men who wish to become Agricultural Representatives or to take teaching positions in other schools and colleges. But even for the graduate who does not intend to teach, this course should be valuable, as it enables him to understand present day educational conditions and educational problems. I hope, however, that provisions may soon be made by The Ontario Department of Education which will enable graduates of this College to become principals of Consolidated Schools, on condition that our courses in the Science of Education are extended so as to include the necessary practice teaching.

MACDONALD INSTITUTE.

The Work in General.

The courses of instruction as indicated in the College calendar, have been carried out as usual.

The negotiations with the Education Department, reported last year, for the restoration of our old One-year Normal Course in Domestic Science, fell through as the Education Department did not accept our proposals.

The steady increase in the number of students in the two-year courses should be noted. At present they constitute about 70 per cent. of the total.

Following a visit from the British Overseas Settlement Commissioners in the early summer, we worked out a scheme for the employment and training of British women settlers coming to Canada, in our College residences and dining-hall, and with your approval forwarded it to the Commissioners for presentation to the British authorities. Details of the scheme will be found in another part of this report.

Following are detailed statistics of the different classes of work.

THE NORMAL COURSE IN DOMESTIC SCIENCE.

Thirteen entered this course in 1917; eight passed to the senior class in 1918; six passed the final examinations last June and have received the Macdonald Institute Teachers' Certificate in Domestic Science.

Eighteen entered the junior class in September, 1918; fourteen passed on to the senior class last September, and are now in attendance.

Sixteen entered the junior class last September, and are now in attendance.

THE ASSOCIATE COURSE.

Sixteen were admitted to this course in 1917; nine passed on to the senior class in 1918; four passed the final examinations last June, and have received the Macdonald Institute Associate diploma.

Twenty-seven entered the course in September, 1918; eighteen passed on to the senior class last September and are now in attendance.

Twenty-one entered the junior class last September and are now in attendance.

THE HOUSEKEEPER COURSE.

Twenty-one entered the course in 1917; seventeen passed on to the senior class in 1918; eight passed the final examinations, and have received the Macdonald Institute Housekeeper certificate.

Fourteen entered the junior class in September, 1918; two transferred to it in January from the Normal Course, and one more was admitted on the strength of previous domestic science training; fifteen passed on to the senior class last September, two graduates of the Truro, N.S. School of Domestic Science were admitted to it by examination, and a member of a former class re-entered to complete the course. All are now in attendance.

Eleven were admitted to the junior class last September and are now in attendance.

Three former graduates, having completed six months' institution housekeeping, were granted the Macdonald Institute Professional Housekeeper certificate.

THE HOMEMAKER COURSE.

Twenty-one entered the course in September, 1918: nine passed the final examinations last June and have received the Homemaker Diploma of Macdonald Institute.

Twenty-six were admitted to this course last September and are now in attendance.

THE SHORT COURSE IN DOMESTIC SCIENCE.

This had in attendance:—

In the Winter term, January to March	27
" Spring term, April to June	12
" Autumn term, September to December	14

OTHER STUDENTS.

Twelve optional students joined various sewing and lecture courses through the year.

Two student-workers have taken the opportunity to pay for courses by service in Macdonald Hall; one served seven months, and another at present is serving for nine months.

EQUIPMENT.

We rejoiced last year at the prospect of an addition to Macdonald Hall which would provide for fifty-four more residents, only to deplore this year the high cost of building, which made it impossible. We shall hope that next year will see it under way. The increasing number of two-year students and one-year students is crowding out the Short Course students, especially during the winter term. The present prospect is that we shall have residence room for but nine new students in January. As early as November 15th we had to begin discouraging applicants hoping for any chance of getting in, owing to the length of the waiting list.

The laundry class-room in Macdonald Institute has always been too small. When the building was planned, no one believed one teacher could manage more than twelve in a class, and it was so arranged. Experience has shown that a good laundry teacher can handle twenty-four quite as well as a cookery teacher, therefore, our laundry teaching is costing us twice what it should. In view of the residence extension which will surely come, we believe it will be wise to move the laundry classroom down to the large room which will be vacated by the Apiculture Department, and to get it done this next year.

SUMMARY OF ATTENDANCE IN 1919.

A—January to June, completing the College year 1918-1919.	
1. Normal Domestic Science—two-year course:	
(*a*) Juniors	15
(*b*) Seniors	8
2. Associate—two-year course:	
(*a*) Juniors	23
(*b*) Seniors	9
3. Housekeeper—two-year course:	
(*a*) Juniors	16
(*b*) Seniors	15
4. Homemaker—one-year course	18
5. Short course in Domestic Science:	
(*a*) Winter term students	27
(*b*) Spring term students	12
6. Optional students	8
7. Student workers	2
8. Public School classes	51
B—September to December, opening the College year 1919-1920:	
1. Normal Domestic Science—two-year course:	
(*a*) Juniors	16
(*b*) Seniors	14

2. Associate—two-year course:	
(*a*) Juniors	21
(*b*) Seniors	18
3. Housekeeper—two-year course:	
(*a*) Juniors	11
(*b*) Seniors	17
4. Homemaker—one-year course	26
5. Short Course in Domestic Science	14
6. Optional Students	4
7. Student worker	1
8. Public School classes	48
C—Students entered in both above lists	70
D—Total number of students in 1918	379
Total number of students in 1919	324

NOTE—The apparent decrease is chiefly due to smaller public school classes, and larger two-year classes.

GRADUATES OF MACDONALD INSTITUTE, O.A.C.

Graduates of the Two-Year Normal Course in Domestic Science (1917-1919):

1. Miss	Lillian I. Beaman	Essex, Ont.
2. "	Jessie I. Deguerre	Mount Albert, Ont.
3. "	Jean F. Flatt	Tantallon, Sask.
4. "	Evelyn E. Maclean	719 Pacific Ave., Winnipeg, Man.
5. "	Ida A. Mogg	50 Brant Rd. S., Galt, Ont.
6. "	Winnifred A. Suttaby	Gravenhurst, Ont.

Graduates of the Housekeeper Course (1917-1919):

1. Miss	R. Muriel Brown	Watford, Ont.
2. "	Mary Eustis	1985 Sedgwick Ave., New York, U.S.A.
3. "	Jessie W. Germain	St. George, Ont.
4. "	Marjorie K. Harley	38 Waterloo Ave., Guelph, Ont.
5. "	Kathleen Lethbridge	Fingal, Ont.
6. "	Ethel E. Nichol	Beeton, Ont.
7. "	Lena H. Reid	Wallaceburg, Ont.
8. Mrs.	M. Barbara Smith	Y.W.C.A., Prince Albert, Sask.
9. Miss	Mary Wismer	Blair, Ont.

Graduates of the Associate Course (1917-1919):

1. Miss	Mary D. Graesser	Fairfield, College Heights, Guelph, Ont.
2. "	Frances M. Hilliard	567 Woolwich St., Guelph, Ont.
3. "	Carita T. F. McKiel	42 McTague St., Guelph, Ont.
4. "	F. Grace Totten	R.R. No. 2. South Woodslee, Ont.

Graduates of the Homemaker Course A. (1918-1919):

1. Miss	Mabel Backus	R.R. No. 2, Wallacetown, Ont.
2. "	Enid C. Cohoe	Courtland, Ont.
3. "	Dora I. Crowther	30 North Main St., Welland, Ont.
4. "	Laura M. Hutton	58 Division St., Welland, Ont.
5. "	Frances L. Leeming	84 Division St., Brantford, Ont.
6. "	Zella E. McNeely	Carleton Place, Ont.
7. "	Phyllis Maybee	R.R. No. 6, Trenton, Ont.
8. "	Olive Nettleton	Penetanguishene, Ont.
9. "	Agnes J. Reder	R.R. No. 2, Dundas, Ont.

Graduate of the Two-Year Normal Course in Domestic Science (1915-1917):

1. Miss	Florence E. Cooke	72 Grenville St., Toronto, Ont.

Graduate of the 1913-15 *Housekeeper Course entitled to the Professional Housekeeper Certificate as having accomplished six months' Institution Housekeeping*:

1. Miss Helen Hepburn		Grange St., Guelph, Ont.

Graduates of the 1916-18 *Housekeeper Course entitled to the Professional Housekeeper Certificate as having accomplished six months' Institution Housekeeping*:

1. Miss	Alpha M. Bott	R.R. No. 4, Embro, Ont.
2. ..	Edith E. Zavitz	R.R. No. 2, Ilderton, Ont.

APPOINTMENTS OF MACDONALD INSTITUTE GRADUATES IN 1919.

TEACHERS.

	Class of	Appointed to
Miss J. C. Bradley	1915	Macdonald Institute, O.A.C.
" G. Conover	1915	Macdonald Institute, O.A.C.
" J. I. DeGuerre	1919	Protestant Schools, Montreal, Que.
" H. English	1919	Public Schools, Calgary, Alberta.
" J. F. Flatt	1919	Dept. of Education, Regina, Sask.
" J. I. Garrow	1918	Public Schools, Brandon, Man.
" A. M. Jackson	1918	Alma College, St. Thomas, Ont.
" F. M. McNally	1914	Normal School, Stratford, Ont.
" G. Manning	1915	Bishop Strachan School, Toronto, Ont.
" M. C. Moxon	1916	Manitoba Agri. College, Winnipeg, Man.
" A. P. Scott	1916	School for the Deaf, Belleville, Ont.
" A. I. Strachan	1919	Macdonald Institute, O.A.C.
" W. Suttaby	1919	Public Schools, Port Arthur, Ont.
" R. M. Ward	1914	Public Schools, Toronto, Ont.

HOUSEKEEPERS AND DIETITIANS.

	Class of	Appointed to
Miss C. L. Black	1916	Hospital, Soldiers' Civil Re-establishment.
" D. Chown	1917	" " " "
" Margaret F. Creelman	1917	" " " "
" R. W. Fraser	1917	" " " "
" A. G. Gow	1918	" " " "
" G. I. Dobson	1910	" " " "
" M. H. McBride	1918	" " " "
" E. Master	1915	" " " "
" H. Soule	1918	" " " "
Mrs. M. E. Bailey	1919	Y.W.C.A., Kitchener, Ont.
Miss J. R. Hall	1916	Y.W.C.A., Ottawa, Ont
" J. W. Germain	1919	Y.W.C.A., Regina, Sask.
" M. Wismer	1919	Y.W.C.A., Montreal, Que.
Mrs. M. Davis	1918	Dalhousie Hall, Port Dalhousie, Ont.
Miss H. Hepburn	1915	Macdonald Hall, O.A.C.
" A. Lammiman	1917	Women's College Hospital, Toronto, Ont.
" E. J. Rogers	1915	Provincial Hospital, Battleford, Sask.
" B. Roulston	1914	Kitchener-Waterloo Hospital, Kitchener.
Mrs. B. Smith	1919	Ladies' College, Halifax, N.S.
Miss E. E. Zavitz	1918	St. Andrew's College, Toronto, Ont.
" M. E. Duff	1917	General Hospital, Kingston, Ont.
" E. Elliot	1917	Western Hospital, Toronto, Ont.
" K. Lethbridge	1919	Queen Alexandra Sanitarium, London, Ont.
" D. L. McCully	1917	Memorial Hospital, Richmond, Va., U.S.A.
" A. W. Murray	1916	General Hospital, Welland, Ont.
" F. M. Reek	1916	Wellesley Hospital, Toronto, Ont.
" L. Reid	1919	Sherbourne House Club, Toronto, Ont.
" L. B. Tippett	1919	General Hospital, Cornwall, Ont.
" M. L. Sheridan	1917	Calydor Sanitarium, Gravenhurst, Ont.
" H. Winlow	1917	Amasa Wood Hospital.
" I. Graham	1918	Drummond Hospital, Montreal, Que.

OTHER WORK.

	Class of	Appointed to
Miss H. Campbell	1913	Soldiers' Settlement Board, Ottawa, Ont.
" R. MacAdams	1911	" " " Edmonton, Alta.
Mrs. M. Cunningham	1908	" " " Regina, Sask.
" J. Muldrew	1907	" " " Ottawa, Ont.
Miss O. E. Hayes	1915	Dept. of Agriculture, Victoria, B.C.
" E. M. Aitken	1918	Consumers' Gas Co., Toronto, Ont.
" M. H. Turpin	1914	Tearoom Owner and Manager, Galt, Ont.
" M. Mactavish	1911	Community Canning Centre, Parkhill, Ont.

REPORT OF LOAN COLLECTION WORK, 1919, FOR WOMEN'S INSTITUTES.

Requests.

Home interests	47
House and housekeeping	60
Food and cookery	54
Dietetics	9
Health	24
Household finance	10
Education, home economics and general	20
Clubs, social service, etc.	105
Gardening and agriculture	11
Arts and crafts	4
Patriotic	32
Miscellaneous	24
Total	390

Answered by.

2,227 folders with pamphlets, articles or clippings.
60 books.
18 special letters.
23 letters regretting material out.
33 letters referred to Mr. Putnam, or to other Departments of the College.

I append the financial statement prepared by Mr. S. Springer, Bursar.

I have the honour to be,

Your obedient servant,

G. C. CREELMAN.

FINANCIAL STATEMENT 1919

COLLEGE DEPARTMENT.

EXPENDITURE.

Salaries and wages	$97,225 69
Servants' paylist	8,094 18
Meat, bread, groceries, laundry, engine-room supplies and fuel	60,978 10
Advertising, printing, postage and stationery	3,988 17
Expenses, Short Courses	1,908 61
Temporary assistance	3,988 26
Student labor	3,434 01
Travelling expenses and extra lectures	1,848 80
Travelling expenses in connection with Potato Disease	423 30
Library	1,999 91
Expenses, College judging team	200 00
Scholarships	100 00
Telephone service, rents, etc.	698 75
Furnishings and repairs	7,695 97
Sewage	745 00
Contingencies	1,304 87
Feed of horses	166 00
Purchase of horse	250 00
Purchase and maintenance of automobiles, trucks and tractors	7,565 79
Estate of late W. H. Scott	62 30
Apparatus, machinery, fuel and expenses for course in Farm Power	494 92
Maintenance, five laboratories and gymnasium	7,633 15
Total expenditure	$210,805 78
Less revenue	52,869 84
Net expenditure	$157,935 94

REVENUE.

Board	$39,167 53
Tuition and laboratory fees	12,572 50
Chemical analyses	256 50
Rent of rooms	221 00
Rent of cottages	60 00
Rent of post-office boxes	40 00
Supplemental examinations	114 00
Fines, breakages and extra meals	225 41
Sundries	212 90
Total revenue	$52,869 84

STUDENT LABOR.

(12 months.)

Total Per Month.	
November	$853 66
December and January	464 16
February	343 45
March	300 40
April	2 97
May	26 10
June	68 51
July	73 32
August	27 75
September and October	1,273 69
Total	$3,434 01

To Different Departments.	
College	$617 05
Chemical	68 59
Botany	18 33
Bacteriology	27 76
Physics	107 55
Entomology	26 64
Gymnasium	50 76
Library	74 24
Farm	1,076 20
Experimental	393 62
Dairy	136 35
Poultry	115 12
Horticulture	478 26
Mechanical	231 03
Apiculture	12 51
Total	$3,434 01

MACDONALD INSTITUTE AND HALL.

EXPENDITURE.

Salaries and wages	$19,516 00
Servants' paylist	2,867 80
Meat, bread, groceries, furnishings, repairs, laundry, engine-room supplies, fuel, and labor on grounds	24,091 42
Library and stationery	719 08
Maintenance of laboratories in Institute	3,171 88
Total expenditure	$50,366 18
Less revenue	25,021 16
Net expenditure	$25,345 02

REVENUE.

Board	$16,317 00
Tuition	8,440 20
Supplemental examinations	52 00
Fines and breakages	211 96
Total revenue	$25,021 16

FARM DEPARTMENT.

EXPENDITURE.

Permanent improvements	$1,458 05
Wages of men, foreman and stenographer	13,123 12
Purchase and maintenance of stock	12,387 70
Farm maintenance, including repairs, blacksmithing, binder twine, seed, furnishings, fuel, light, advertising, printing, stationery, tools, implements, etc.	4,499 01
Contingencies	288 95
Total expenditure	$31,756 83
Less revenue	18,182 48
Net expenditure	$13,574 35

REVENUE.

Sale of Cattle:—		
17 Bulls at from $30.00 to $325.00	$2,107 50	
5 Cows at from $160.00 to $850.00	2,232 50	
2 Heifers at from $72.50 to $950.00	1,022 50	
1 Heifer, 1,150 lbs. at $17.00 cwt.	195 50	
1 Steer, 1,317 lbs. at $16.50 cwt.	217 30	
		$5,775 30
Sale of Pigs:—		
33 Boars at from $13.00 to $42.50	$546 00	
57 Sows at from $20.00 to $100.00	2,489 00	
4 Hogs at $31.25	125 00	
38 Hogs, 7,739 lbs. at from $15.50 to $23.00 cwt.	1,504 67	
		4,664 67
Sale of Sheep:—		
21 Rams at from $20.00 to $55.00	$742 00	
18 Ewes at from $32.50 to $50.00	747 50	
6 Lambs at $5.00	30 00	
24 Lambs, 2,221½ lbs. at $14.85 cwt.	329 88	
		1,849 38
Sale of Milk:—		
28,212½ qts. at from .05 to .07	$1,604 12	
81,896 lbs. at from $2.00 to $3.30 cwt.	1,854 97	
		3,459 09

Service of animals		$252 50
Sale of 500 bags potatoes at $1.50		750 00
Sale of 40 bushels turnips at .20		8 00
Sale of 140 lbs. wheat for		4 55
Sale of 19,142 lbs. ensilage at $6.00 ton		57 42
Sale of 37,870 lbs. roots at $5.00 ton		94 67
Sale of 439½ lbs. wool at .55		241 71
Sundries		160 61
Feed of Horses:—		
10 Horses for 1 year at $83.00	$830 00	
1 Horse for 5/12 year at $83.00	34 58	
		864 58
Total revenue		$18,182 48

FIELD HUSBANDRY DEPARTMENT.

Expenditure.

Permanent improvements	$707 46
Assistant, specialist in plant breeding, stenographer, foreman, teamsters and laborers	18,020 00
Seeds, manure and special fertilizers	910 93
Furnishings, implements, repairs, blacksmithing, etc.	1,099 30
Printing, postage, stationery and contingencies	663 42
Purchase of horse and feed	498 00
Total expenditure	**$21,899 11**

DAIRY DEPARTMENT.

Expenditure.

Wages, including foreman, cheesemaker, buttermaker, engineer, stenographer and bookkeeper, assistant and official tester of dairy cattle	$4,038 50
Purchasing, hauling and manufacturing milk into butter and cheese	4,113 56
Furniture, furnishings, repairs, etc., laboratory expenses, gas, chemicals and contingencies	1,599 27
Fuel and light	1,099 85
Total expenditure	$10,851 18
Less revenue	3,353 64
Net expenditure	$7,497 54

Revenue.

Sale of cheese, 6,951¾ lbs. at from .07 to .40	$1,912 61
Sale of butter, 504 lbs. at from .20 to 54½	229 43
Sale of cream, 1,133 qts. at from .25 to .72	454 92
Sale of milk, 399 qts. at from .05 to .08	21 66
Sale of ice cream, 15½ gallons at .80	12 40
Sale of skimmilk and buttermilk, 163,950 lbs. at from .25 to .30 cwt.	473 40
Sale of wheymilk, 64,330 lbs. at .05 cwt.	32 17
Sundries	7 05
Rent of houses	210 00
Total revenue	$3,353 64

DAIRY SCHOOL.

Expenditure.

Wages of instructors, engineer, janitor, stenographer and bookkeeper	$2,440 00
Cleaning, painting, repairs and contingencies	288 14
Dairy appliances, separators, vats, expenses cheese and butter judges, inspecting factories, etc.	499 79

Advertising, printing, stationery, books, papers, etc.	$124 68
Fuel and light	600 00
Purchase of milk for cheesemaking and cost of hauling milk and cream	4,731 06
Total expenditure	$8,683 67
Less revenue	2,361 97
Net expenditure	$6,321 70

REVENUE.

Sale of cheese, 6,370¾ lbs. at from .10 to .40	$1,693 87
Sale of butter, 173½ lbs. at from .43 to .46	76 40
Sale of cream, 413¾ qts. at from .50 to .52	206 96
Sale of ice cream, 109½ qts. at .40	43 80
Sale of milk, 207 qts. at from .05 to .08	13 56
Sale of skimmilk and buttermilk, 82,635 lbs. at .30 cwt.	247 91
Sale of wheymilk, 61,200 lbs. at .05 cwt.	30 60
Sundries	13 87
Fees	35 00
Total revenue	$2,361 97

POULTRY DEPARTMENT.

EXPENDITURE.

Permanent improvements	$44 55
Wages of assistant, stenographer and temporary assistance	3,500 00
Purchase of stock	292 14
Furnishings and repairs	1,485 30
Fuel, light and contingencies	1,527 21
Experiments with incubators, fattening and feed	9,298 06
Feed of horse	83 00
Poultry extension work	3,934 47
Total expenditure	$20,164 73
Less revenue	10,053 58
Net expenditure	$10,111 15

REVENUE.

Sale of live poultry:—		
373 live birds for	$800 25	
121 day-old chicks for	12 05	
		$812 30
Sale of dressed poultry, 5,122 7/16 lbs. at from .16 to .75		1,728 24
Sale of eggs for hatching:—		
690½ settings at from $1.00 to $2.00	$1,311 40	
13,807 eggs at from .06 to .13	1,671 00	
		2,982 40
Sale of eggs for domestic use, 8,834 7/12 doz. at from .25 to .75		4,527 44
Sundries		3 20
Total revenue		$10,053 58

HORTICULTURE DEPARTMENT.

EXPENDITURE.

Permanent improvements	$495 00
Foreman, fireman, stenographer, teamsters and laborers	11,472 88
Manure, trees, plants, bulbs, implements, tools, furnishings, repairs and contingencies	3,199 74
Fuel and light	831 24
Feed of horses	498 00
Draughtsman, landscape gardening	438 46
Total expenditure	$16,935 32
Less revenue	1,906 41
Net expenditure	$15,028 91

REVENUE.

Sale of fruit, vegetables, etc., as per itemized statements rendered monthly	$1,906 41

MECHANICAL DEPARTMENT.

EXPENDITURE.

Salary of foreman	$1,400 00
Tools, furnishings and repairs	246 97
Total expenditure	$1,646 97

SOIL PHYSICS DEPARTMENT.

EXPENDITURE.

Services and expenses of temporary assistants in connection with Farm Drainage Demonstrations	$5,498 57

APICULTURE DEPARTMENT.

EXPENDITURE.

Wages, equipment and maintenance	$1,748 60
Less revenue	831 79
Net expenditure	$916 81

REVENUE.

Sale of honey, 2,350 lbs. at from .18 to .22		$471 94
Sale of bees:—		
18 colonies at from $15.00 to $18.00	$279 00	
8 queens at from $1.00 to $1.25	8 50	
		287 50
Sale of wax presses, 6 at $8.00		48 00
Sale of wax, 11½ lbs. at .40		4 60
Sundries		19 75
Total revenue		$831 79

FORESTRY DEPARTMENT.

EXPENDITURE.

Contingencies	$953 00

SUMMARY.

	Expenditure.	Revenue.	Net Expenditure.
College	$210,805 78	$52,869 84	$157,935 94
Macdonald Institute and Hall	50,366 18	25,021 16	25,345 02
Farm	31,756 83	18,182 48	13,574 35
Field Husbandry	21,899 11	....	21,899 11
Dairy	10,851 18	3,353 64	7,497 54
Dairy School	8,683 67	2,361 97	6,321 70
Poultry	20,164 73	10,053 58	10,111 15
Horticulture	16,935 32	1,906 41	15,028 91
Mechanical	1,646 97	....	1,646 97
Soil Physics	5,498 57	....	5,498 57
Apiculture	1,748 60	831 79	916 81
Forestry	953 00	....	953 00
	$381,309 94	$114,580 87	$266,729 07

S. SPRINGER,
Bursar Supt.

Ontario Department of Agriculture

REPORT

OF THE

Ontario Veterinary College

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by CLARKSON W. JAMES, Printer to the King's Most Excellent Majesty
1921

Printed by
THE RYERSON PRESS.

To His Honour, LIONEL H. CLARKE,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the pleasure to present herewith for the consideration of Your Honour the Report of the Ontario Veterinary College, for the year 1919.

Respectfully submitted,

MANNING W. DOHERTY,

Minister of Agriculture.

TORONTO, 1920.

MEMBERS OF THE COLLEGE STAFF

E. A. A. Grange, V.S., M.Sc.	Principal Emeritus. Lecturer in Veterinary Hygiene.
C. D. McGilvray, V.S., M.D.V.	Principal. Lecturer and Instructor in Contagious Diseases, Special Therapeutics and Clinical Diagnostics.
H. D. Nelson, V.S., D.V.Sc.	Lecturer and Instructor in Veterinary Anatomy and Physiology.
D. R. Caley, V.S.	Lecturer and Instructor in Surgery, Animal Restraint and Clinical Diagnostics.
J. N. Pringle, M.R.C.V.S.	Lecturer and Instructor in Sporadic Diseases, and Dentistry.
R. A. McIntosh, M.D.V.	Lecturer and Instructor in Obstetrics and Diseases of Cattle, Sheep and Swine.
J. A. Campbell, V.S.	Lecturer and Instructor in Canine and Feline Diseases.
R. Gwatkin, V.S., B.V.Sc.	Lecturer and Instructor in Veterinary Bacteriology, Biologics and Milk Inspection.
H. E. Batt, V.S.	Lecturer and Instructor in Veterinary Sanitation, Histology and Pathology.
C. H. Weaver, B.V.,Sc.	Lecturer and Instructor in Meat Inspection.
D. K. Smith, M.B., V.S.	Lecturer in Pathology.
E. A. McCulloch, B.A., M.D.	Parasitology.
W. L. T. Addison, B.A., M.D.	Lecturer and Instructor in Veterinary Zoology, Embryology and Histology.
Paul L. Scott, M.B.	Lecturer and Instructor in Veterinary Pharmacy.
C. A. Temple, M.D., C.M.	Lecturer in Veterinary Materia Medica.
R. R. Fleming, B.S.A.	Lecturer and Instructor in Animal Husbandry.
R. B. Thomson, B.A.	Lecturer and Instructor in Botany, University of Toronto.
J. R. MacLeod, B.A., M.D.	Lecturer and Instructor in Physiology, University of Toronto.
J. G. Fitzgerald, M.B.	Lecturer in Bacteriology, University of Toronto.
Professor Hunter	Lecturer and Instructor in Bio-Chemistry, University of Toronto.
Professor Allan	Lecturer and Instructor in Chemistry, University of Toronto.
Professor Burton	Lecturer and Instructor in Physics, University of Toronto.
Dyce W. Saunders, K.C.	Lecturer in Veterinary Jurisprudence.
H. W. Brown	Lecturer in English, Civics and Economics.
Professor Kirkpatrick	Lecturer and Instructor in Public Speaking.

Report of the
Ontario Veterinary College
1919

To the Honourable MANNING W. DOHERTY, *Minister of Agriculture, Toronto.*

SIR,—I have the honour to submit herewith the following report of the Ontario Veterinary College for the year 1919.

During the past College Session, which ended April 30th, the total number of students in attendance amounted to 70 in all classes. Of this number 39 were graduated and received the Diploma of the College, and 8 of them were subsequently granted the degree of Bachelor of Veterinary Science (B.V.Sc.) by the University of Toronto.

The graduating exercises were held at the College on April 29th, on which occasion you presided and delivered an address in addition to awarding the Diplomas. Addresses were also delivered by Dr. J. G. Rutherford, C.M.G., of the Board of Railway Commissioners, Ottawa, and by Dr. F. Torrance, the Veterinary Director-General, Ottawa.

During the present session, which commenced on October 1st, 1919, there are 78 students attending. The negotiations which you were pleased to enter into with the University have resulted in a closer affiliation, which places the requirements for admission on a more satisfactory basis, with a higher standard of qualification. The effect has been to attract to the present first year class a good type of student, and by requiring matriculation for entrance will enable all of the graduates hereafter to receive the Degree of Bachelor of Veterinary Science from the University. Your action in bringing about this arrangement has been favourably received and will tend to improve the status of the graduate and the profession in general.

Some adjustments in the personnel of the teaching staff were required as a result of vacancies created by members of the faculty accepting other appointments and moving to other places. J. A. Amyot, M.B., Lecturer in Bacteriology, received the appointment of Deputy Minister of Public Health at Ottawa, and J. G. Fitzgerald, M.B., of the Department of Bacteriology at the University of Toronto, has been secured in his place. J. A. Allen, B.V.Sc., has returned to his position at the Biological Laboratory at Ottawa, and R. Gwatkin, B.V.Sc., has been appointed in his place as Instructor in Bacteriology and Milk Hygiene. S. A. Cudmore, B.A., Lecturer in Economics, resigned on account of accepting a position with the Bureau of Statistics at Ottawa. The services of Mr. H. W. Brown, of the Oakwood Collegiate Institute, have been secured for the purpose of giving instruction in English, Civics and Economics. F. H. Kirkpatrick, Ph.D., of the Toronto School of Expression, who has given a special course in Public Speaking, has been granted leave of absence from this term and has provided a capable substitute in the person of Capt. W. G. Frisby, the Principal of York Street School. A. C. Walker, B.V.Sc., Lecturer in Meat Inspection, has removed to Ingersoll, and C. H. Weaver, B.V.Sc., has been appointed in his place. F. D. Shaver, B.S.A., Instructor in Animal Husbandry, having accepted a position with the Soldiers' Land Settlement Board, was unable to continue his work at the College, and in his place R. R. Fleming, B.S.A., was appointed. To further strengthen the teaching staff the services of R. A. McIntosh, M.D.V., were secured to give additional instruction on Diseases of Cattle, Sheep and Swine.

Among the activities of the College mention might be made of the College Exhibit at the Exhibition, held at Toronto, during the last week in August and first week in September. The exhibit was in charge of Dr. H. E. Batt and Mr. W. Graham, and proved to be of great interest and attracted much attention and favourable comment.

On August 6th and 7th the Annual Meeting of the Ontario Veterinary Association was held at the College. There were over 100 Veterinary Surgeons in attendance. A special course of Clinics and Demonstrations were arranged for and the services of Dr T. H. Ferguson, of Lake Geneva, Wisconsin, were obtained to give advanced work in Diseases of Breeding Cattle and Surgical Treatment of Diseases of the Udder. Demonstrations and operations were also conducted by members of the College staff. An exhibit of pathological specimens also added greatly to the educational features of the meeting.

On August 13th and 14th the Annual Meeting of the Central Canada Veterinary Association was held at Ottawa. For this meeting the College was also able to provide experts to conduct short course work. For this meeting the services of W. L. Williams of Cornell University, New York, Dr. J. Adams of the University of Pennsylvania, and Dr. W. J. R. Fowler of Toronto, were availed of.

During the College term S. E. Hadwen, D.V.S., Chief Pathologist of the Department of Agriculture at Ottawa, visited the College and gave a short course of illustrated lectures on Parasitology to the students. Monthly meetings of the Dominion Government Veterinary Inspectors' Association were held at the College throughout the Session. At these meetings members of the College staff gave special lectures on subjects pertaining to Veterinary Science.

The College also published the following Bulletins during the year:

An illustrated pamphlet outlining the opportunities and requirements of the Veterinary Profession.

A bulletin on "Contagious Abortion in Cattle" for the benefit of breeders and veterinarians.

During the year I attended the following meetings and delivered addresses on veterinary topics and live stock matters.

At a meeting of the Sheep Breeders Association, held at Toronto, delivered an address on "Maintaining the Health of Sheep for increased Production."

At the meeting of the Central Canada Veterinary Association, held at Ottawa, delivered an address on "Recent Advances in Veterinary Education."

At a meeting of the Academy of Medicine at Toronto delivered an illustrated address on "Incidents of Glanders in Horses and Man."

At a meeting of the District Agricultural Representatives, held at the Agricultural College at Guelph, delivered an address on "Veterinary Usefulness to Live Stock Owners."

At a meeting of the Animal Husbandry Club, held at the Agricultural College at Guelph, delivered an illustrated address on "Contagious Diseases of Animals of importance to Live Stock Owners."

The names of those members of the Faculty Graduates and Undergraduates who served in the Canadian and British Expeditionary Forces during the late war, constitute the Honour Roll of the College, and comprise 11 members of the Faculty, 269 Graduates and 29 Undergraduates, making a total of 309.

All of which is respectfully submitted.

I have the honour to be,

Sir,

Your obedient Servant,

C. D. McGilvray,

Principal.

Ontario Department of Agriculture

FORTY-FIRST ANNUAL REPORT

OF THE

AGRICULTURAL
AND
EXPERIMENTAL UNION

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

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To His Honour LIONEL CLARKE.

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the pleasure to present herewith for the consideration of your Honour the report of the Agricultural and Experimental Union for 1919.

Respectfully submitted,

MANNING W. DOHERTY,

Minister of Agriculture.

Toronto, 1920.

Ontario Agricultural and Experimental Union

OFFICERS FOR 1920

President	H. K. Revell, Goderich, Ont.
Vice-President	J. B. Spencer, Ottawa, Ont.
Secretary	C. A. Zavitz, Agricultural College, Guelph.
Assistant Secretary	W. J. Squirrell, Agricultural College, Guelph.
Treasurer	A. W. Mason, Agricultural College, Guelph.
Directors	Dr. G. C. Creelman, Hon. H. Nixon, J. W. Widdifield, M.P.P., C. M. Laidlaw, D. McArthur.
Auditors	R. R. Graham and S. H. Gandier.

COMMITTEES ON CO-OPERATIVE EXPERIMENTAL WORK

Agriculture	C. A. Zavitz (Director), W. J. Squirrell, A. W. Mason, C. R. Klinck, A. E. Whiteside.
Agricultural Botany	J. E. Howitt (Director), T. G. Raynor, W. J. W. Lennox, W. C. Evans.
Forestry	E. J. Zavitz (Director), A. H. Tomlinson, H. A. Dorrance.
Agricultural Chemistry	R. Harcourt (Director), A. L. Gibson, P. L. Fancher, J. L. Dougherty.
Apiculture	F. E. Millen (Director), Roy Jarvis, O. A. Sippel.
Farm Literature	O. J. Stevenson (Director), R. R. Graham, J. P. Sackville.
Agricultural Physics	W. C. Blackwood (Director), R. R. Graham, R. C. Moffatt, F. L. Ferguson.
Agricultural Bacteriology	D. H. Jones (Director), J. P. Sackville, A. Davey.

TREASURER'S REPORT, 1919

Receipts.	
Balance from 1918	$2,323 48
Government grant	2,750 00
Membership fees, 270 at 50c.	135 00
Interest	59 71
	$5,268 19

Expenditures.	
Agricultural Experiments	$2,956 17
Agricultural Chemistry	45 20
Agricultural Botany	39 75
Farm Literature	137 68
Apiculture	1 11
Expenses Annual Meeting, 1919	174 80
Meeting of Executive	37 55
Printing, Postage, etc., Annual Meeting, 1920	177 10
Ex-students' Register	66 00
Total	$3,635 36
Balance on hand	1,632 83
	$5,268 19

Ontario Agricultural and Experimental Union

ANNUAL MEETING

The forty-first annual meeting of the Ontario Agricultural and Experimental Union was held at the Ontario Agricultural College, Guelph, on Tuesday and Wednesday, January 13th and 14th, 1920. On Tuesday three sessions, and on Wednesday three sessions of the Experimental Union meeting were held. All the day sessions convened in Massey Building; the evening sessions in the College Gymnasium. Most of the sessions were crowded beyond the seating capacity of the hall and gymnasium. The reports and the most important discussions which took place during the different sessions of the Experimental Union meeting, are embodied in this report.

SECRETARY'S REPORT.

Dr. C. A. Zavitz, Professor of Field Husbandry, O. A. College, Guelph.

The annual report of the last meeting of the Ontario Agricultural and Experimental Union was printed by the Department of Agriculture, Toronto, and made a volume of seventy-two pages. This was distributed to all successful experimenters, to the graduates of the college, and to other farmers throughout Ontario whose names are on the regular mailing list in the Department of Agriculture, Toronto.

Two meetings of the Board of Control were held within the past year, one in January and the other in September.

Ex-Students' Register.

In 1919, an extensive survey was made to ascertain the present addresses and occupations of the ex-students of the regular course of the Ontario Agricultural College. It was also carried out with the object of finding out the part taken by the students and the ex-students in the recent war.

Approximately twenty thousand young men and young women have enrolled at the Ontario Agricultural College since its inception in 1874. About forty-five hundred entered the regular agricultural course, eighty-one hundred the winter short courses, twenty-eight hundred the summer short courses, two hundred the Manual Training course and forty-seven hundred the long and short courses in Home Economics.

Of the 4,491 registrations in the regular agricultural course, 554 are of students in attendance at present and 3,937 are of ex-students. Of these ex-students 1,574 received the Associate Diploma in agriculture granted by the college at the end of the two years' course, and of this number 698 received the B.S.A. degree at the end of the complete course.

The ex-student register in the office of the Experimental Union now contains the addresses of ninety-eight per cent. of the graduates, ninety-four per cent. of the associates and sixty-two per cent. of the under-associates. Of the entire ex-student body in the regular course 312 deaths are recorded, fully one-third occurring in the recent war.

Of the students who entered the regular agricultural course, eighty-six per cent. registered from Canada, three per cent. from twenty-five States of the American Union and eleven per cent. from forty-three other countries.

The present addresses of the ex-students show eighty-five per cent. located in Canada, nine per cent. in forty States of the American Union and six per cent. in thirty-one other countries. Of those who received the B.S.A. degree, eighty-one per cent. are at present in Canada, twelve per cent. in twenty-four States of the American Union and seven per cent. in fourteen other countries.

Of the ex-students of the regular course now residing in Canada, seventy-two per cent. of the total number and sixty-seven per cent. of the B.S.A. men are located in the Province of Ontario.

According to the latest information received, eighty per cent. or four-fifths of all the ex-students of the regular course, eighty per cent. of the Diploma men and ninety-two per cent. of the B.S.A. men are engaged in agricultural work.

It is found that if the forty-four years of the College, from 1874 to 1917, inclusive, are divided into four periods of eleven years each, the ex-students of the regular course are engaged at the present time in occupations according to the following percentages:

Four eleven year periods	Farmers	Agriculturists other than Farmers	Non-Agriculturists
1874–1884	50	5	45
1885–1895	58	16	26
1896–1906	57	30	13
1907–1917	50	42	8

The percentage on the land is fairly constant, varying not more than four per cent. in any one period from the general average of fifty-four per cent. It is interesting to note that the *increase* in percentage of those following agricultural work other than farming, corresponds closely with the *decrease* in percentage of those following non-agricultural pursuits.

Five ex-students who are farmers fill the important positions of Premier, Minister of Agriculture, Provincial Secretary, Minister of Education and Minister of Public Works of the Ontario Government.

Included under agricultural work other than farming are officials in Government Agricultural departments; Agricultural Colleges and University presidents, professors and investigators; Agricultural editors, Agricultural representatives; members of the Soldier Settlement Board; Cheese makers; Butter makers; Drovers; Farm managers, etc. The twenty per cent. of ex-students of the regular course not engaged in agricultural work comprise clergymen, missionaries, veterinary surgeons, implement agents, flour millers, produce dealers, bakers, manufacturers, lawyers, etc.

In the recent war, 789 of the students and ex-students of the regular College course in Agriculture enlisted. In the service ranks there were over two hundred and thirty commissioned officers, including two Brigadier-generals, two Colonels, six Lieutenant-colonels, fifteen Majors, forty-nine Captains and 159 Lieutenants. For services in the field at least fifty of the ex-students received decorations from the British Government, including the following: D.S.O., one; M. C., twenty-five; M.C. and Bar, two; D.S.C., one; D.C.M., eight and M.M., eleven. In addition to these a number of ex-students received decorations from the French and the Italian Governments.

No less than 108 O.A.C. men lost their lives in the war. In memory of these it is planned to erect a Memorial Hall on the College Campus.

In a previous survey made about twenty years ago for the first twenty-five years of the Ontario Agricultural College, it was found that 54 per cent. of the ex-students of the regular course were resident in Ontario, and of this number 71 per cent. were farmers.

It is learned from the present survey that 61 per cent. of the regular course ex-students are resident in Ontario, and of these 65 per cent. are farmers and 21 per cent. are engaged in other agricultural pursuits, making a total of 86 per cent. at agricultural work.

In this connection it is interesting to note that in a survey made of the Alumni of Yale University in Connecticut, it was found that only 2 per cent. of the graduates of that institution were in any way engaged in agricultural work.

To educate for agriculture it seems essential to do it through institutions where the ideals and the aspirations are in close sympathy with rural life.

Co-operative Work.

Since our last annual meeting co-operative experimental work has been conducted by the Experimental Union in the Departments of Agricultural Botany, Agricultural Chemistry, Forestry, Beekeeping, Agriculture and Farm Literature.

The Committee on Farm Literature was appointed in the spring of 1919 for the first time. The director formulated a questionnaire regarding debates and plays suitable for rural communities, and sent this to about 1,400 people throughout rural Ontario. In addition, another questionnaire was prepared and sent to about 100 Colleges and Universities in Canada and the United States to ascertain what was being done at these various institutions to assist rural communities. It is believed that there will be an excellent field of work opened up for this committee.

The co-operative work in agriculture has been conducted for thirty-four years during which time there have been 94,703 distinct tests made throughout the Province. Each of these tests consisted of from two to ten plots. In 1919 the co-operative experiments in agriculture were conducted on 2,468 Ontario farms.

Financial Influences.

In a comparatively new country there is a tendency for the land to gradually decrease in productivity. This seemed to be true to a certain extent in the Province of Ontario in the latter part of the last century. Happily, a change has taken place. Through the influence of the Ontario Agricultural College, the Agricultural Experimental Union, and other agencies, there has been an actual increase in crop production throughout the Province in recent years. This has been brought about largely through the introduction of new and better varieties, the application of better methods of cultivation, a more thorough system of underdrainage, etc.

According to the Bureau of Industries for Ontario, for instance, the increase in yield per acre for the last eighteen years in comparison with the eighteen years previous amounts to 20 per cent. for barley, 14 per cent. for winter wheat, and 10 per cent. for oats. These increases in yield per acre for the three crops in the past eighteen years would mean increases in the market values of these crops to the Province as follows:—

Oats	$65,632,441
Winter Wheat	35,239,437
Barley	33,795,525
	$134,667,403

This extra value of $134,667,403, brought about simply by the increase in yield per acre of these three farm crops grown in Ontario in the last eighteen years over the previous period, has furnished an estimated amount equivalent to the sum necessary to maintain the Ontario Agricultural College, in accordance with its present expenditure, for thirty times this eighteen-year period, or for fully 540 years.

PRESIDENT'S ADDRESS.

HON. NELSON MONTEITH, STRATFORD.

We are again gathered within the confines of our *alma mater* to receive the reports of the various committees on co-operative experiments in Forestry, Agricultural Botany, Agricultural Chemistry, Beekeeping, Agriculture, and a survey of Farm Literature.

There has been a notable falling off in the number of individual experimenters during the period of the war, but evidence of a revival has been shown by the increased demand for material for experiments during the past autumn. These co-operative experiments have been conducted throughout Ontario for the past thirty-four years, and have proved a splendid medium for a wide distribution of valuable information.

The crops throughout Ontario during the past year have been below the average, but higher prices have helped in a large measure to make up the shortage. The ending of the great war has brought but little relief to the labor situation in rural Ontario. The retaining of those on the land who are to the manor born is the surest hope of Ontario's agriculture. To this end improved environment, shorter hours of labor, and better pay are necessary.

Ontario farmers proved their efficiency in food production during the stress of war, but now that the war is over there is a tendency to go easier in sympathy with the general trend of non-agriculturists. The shortening of hours of labor in urban centres, the so-called daylight saving, and price setting are all factors tending to decrease agricultural production, which, in turn, will have a marked effect on the cost of living in the near future.

This Experimental Union meeting is the one annual agricultural meeting which ex-students and students should not fail to attend. Here the ex-students, by co-mingling with the student body, regain some of the enthusiasm of youth, while the students may from the ex-students learn some of the lessons gleaned only in the wide field of experience. Our Alumni Associations, while good in their way to keep alive the fraternal feeling that should exist among the ex-students, do not touch the work of the president and staff of the College as does this Union, which in a measure annually reviews the work of the different departments of the College, and thus keeps alive a more sympathetic interest in their work.

From this centre some 4,500 young men have gone, to whom this College and its environment has been an inspiration for better citizenship. The farm body of Ontario has felt the influence for better agriculture as taught here. Agricultural organizations and municipal councils have recruited largely from the ex-student body, while never before has the shaping of Ontario's destinies rested so largely in the keeping of ex-students.

Yet with all this achievement the crowning glory of this institution has been the noble self-sacrifice as shown by the response of students and ex-students to their country's call. When the very foundations of our liberties were at stake in the great war, 789 of the students and ex-students enlisted, of whom 107 lie buried in the shell-torn fields of France and Flanders. To these men it is proposed to erect a fitting memorial on the College Campus, to which every student and ex-student should feel it a privilege to contribute.

RESULTS OF CO-OPERATIVE EXPERIMENTS IN AGRICULTURE.

Dr. C. A. Zavitz, Professor of Field Husbandry, O. A. College, Guelph.

In 1919 co-operative work in agriculture was conducted throughout Ontario through the medium of the Experimental Union for the thirty-fourth season. The committee appointed at the last annual meeting to take charge of this work was as follows: C. A. Zavitz (Director), W. J. Squirrell, A. W. Mason, C. R. Klinck, and A. E. Whiteside. As director of the committee it is my duty to present the summary reports of the successfully conducted co-operative tests in agriculture for the past year.

The co-operative work with farm crops forms an excellent connecting link between the work of the Field Husbandry Department of the Ontario Agricultural College and the extensive work of crop production throughout the Province. It enables the farmers to get a good start of the best varieties for their own particular soils. It also furnishes the foundation stock for the work of the Canadian Seed Growers' Association in Ontario, the Standing Field Crop Competitions, the Seed Departments of the Exhibitions and Winter Fairs, etc.

In 1919 there were in all thirty-six distinct and separate tests, six being with autumn and thirty with spring sown crops. Full and definite instructions were furnished with each of the thirty-six experiments. Information regarding the two sets of experiments is here given. These were sent not only to the prospective experimenters, but were also forwarded to the agricultural journals and the newspapers of Ontario.

Winter Crops, 1918—1919.

Material for any one of the six experiments here mentioned will be sent free to any Ontario farmer applying for it, if he will conduct an experiment with great care and report the results after harvest next year. The seed will be sent out in the order in which applications are received as long as the supply lasts.

1. Testing three leading varieties of Winter Wheat	3 plots.
2. Testing one leading variety of Winter Rye and one of Winter Wheat	2 "
3. Testing Spring Applications of five Fertilizers with Winter Wheat	6 "
4. Testing Autumn and Spring Applications of Nitrate of Soda and Common Salt with Winter Wheat	5 "
5. Testing Winter Emmer and Winter Barley	2 "
6. Testing Hairy Vetches and Winter Rye as Fodder Crops	2 "

The exact size of each plot is to be one rod wide by two rods long. The material for experiments Nos. 1, 2, 3, 5 and 6 will be forwarded by mail, and for the other one by express. Each person wishing to conduct one of these experiments should apply as soon as possible, mentioning which test he desires, and the material, with instructions for testing and the blank form on which to report, will be furnished free of cost until the supply of experimental material is exhausted.

SPRING CROPS, 1919.

The members of the Ontario Agricultural and Experimental Union are pleased to state that for 1919 they are prepared to distribute into every township in Ontario material for experiments with fodder crops, roots, grains, grasses, clovers and fertilizers. Fully 2,500 varieties of farm crops have been tested in the Experimental department of the Ontario Agricultural College, Guelph, for at least five years. These consist of nearly all the Canadian sorts, and several hundred new varieties and new strains, a few of which have done exceedingly well in the carefully conducted experiments at the College, and will be used for the co-operative experiments throughout Ontario in 1919.

Each person in Ontario who wishes to join in the work may choose any one of the experiments for 1919, fill out the accompanying form of application, and return the same to the Director of the Co-operative Experiments in Agriculture at as early a date as possible. The material will be furnished in the order in which the applications are received, until the supply is exhausted. A sheet containing the instructions for conducting the chosen experiment, and the blank form on which to report the results of the work, will be sent to each experimenter at the time the fertilizers or seeds are forwarded. All material will be furnished entirely free of charge to each applicant, and the produce of the plots will, of course, become the property of the person who conducts the experiment. In return, the Committee on Agricultural Experiments desires to ask that each experimenter will sow all the plots belonging to the particular experiment which he has chosen for 1919, and that he will be very careful and accurate in his work, and forward to the Director a complete report of the results obtained from the test, as soon as possible after the plots are harvested.

All seeds and fertilizers will be sent in good time for spring seeding, providing the applications are received at an early date. The supply of material being limited, those who apply first will be surest of obtaining the desired outfit. Each applicant should make a second choice, for fear the first could not be granted. The experiment selected should be indicated by using its number as given in the left hand column in the list of experiments. Further information is given on the application form which is attached.

LIST OF EXPERIMENTS FOR 1919.

Grain Crops.

	Plots
1. Testing two varieties of Oats	2
2. Testing O. A. C. No. 21 Barley and Emmer	2
3. Testing two varieties of Hulless Barley	2
4. Testing two varieties of Spring Wheat	2
5. Testing two varieties of Buckwheat	2
6. Testing three varieties of Field Peas	3
7. Testing two varieties of Spring Rye	2
8. Testing three varieties of Soy, Soja or Japanese Beans	3
9. Testing seven varieties of Flint and Dent Husking Corn	7

Root Crops.

10. Testing three varieties of Mangels	3
11. Testing two varieties of Sugar Mangels	2
12. Testing three varieties of Swedish Turnips	3
13. Testing two varieties of Fall Turnips	2
14. Testing two varieties of Carrots	2

Forage, Fodder, Silage and Hay Crops.

15. Testing the planting of Corn at six distances in the row	6
16. Testing three varieties of Millet	3
17. Testing two varieties of Sorghum	2
18. Testing Grass Peas, and two varieties of Vetches	3
19. Testing Rape, Kale and Field Cabbage	3
20. Testing three varieties of Clover	3
21. Testing two varieties of Alfalfa	2
22. Testing four varieties of Grasses	4

Culinary Crops.

23. Testing three varieties of Field Beans	3
24. Testing two varieties of Sweet Corn	2

Fertilizer Experiments.

25. Testing fertilizers with Rape	5
26. Testing fertilizers with Mangels	10

Miscellaneous Experiments.

27. Testing Northern and Southern Grown Seed Potatoes	2
28. Testing two varieties of Potatoes	2
29. Testing three grain mixtures for Grain production	3
30. Testing three grain mixtures for Fodder production	3

The size of each plot in each of the first twenty-six experiments and in Nos. 29 and 30 is to be two rods long by one rod wide; in Nos. 27 and 28 one rod square.

If you wish to conduct one of the thirty agricultural experiments named on the accompanying circular, kindly fill out this blank form and return it as soon as possible.

The distribution will be confined to the choice varieties included in the various experiments. In filling out the blank form, therefore, it is neither necessary nor advisable to mention any particular variety or varieties.

Materials for experiment 26 will be sent by express, and that for each of the others by mail.

Application for Material for an Experiment.

I would like to conduct experiment number ......, but if all the material for that experiment has been applied for before my application is received I select experiment number ......, as my second choice. If the material for one of these experiments is forwarded to me, I will endeavor to

1. Carry on the test according to the instructions received with the seed.
2. Exercise care and accuracy in the work, and
3. Report the result of the experiment as soon as possible after harvest, whether successful or not.

The past five years have been somewhat abnormal for crop production, as will be seen from the following table which gives the average rainfall for this period in comparison with the fifteen years previous for each of six months, from April to September inclusive, as determined by the Department of Physics at the Ontario Agricultural College:

Period	April	May	June	July	August	Sept.	Total
	inches	inches	inches	inches	inches	inches	inches
1900-1914 (15 years)..........	2.22	2.73	2.39	3.40	2.74	2.32	15.82
1915-1919 (5 years)............	2.82	3.98	3.82	3.37	4.00	2.84	20.83

The average rainfall for the six growing months of the past five years has been about 32 per cent. greater than that of the fifteen years previous.

The following gives the amount of rainfall for each of the six growing months in each of the past five years:

Year	April	May	June	July	August	Sept.	Total
	inches	inches	inches	inches	inches	inches	inches
1915	2.23	2.24	2.27	5.87	6.16	3.92	22.69
1916	3.53	4.41	4.46	1.21	1.68	1.83	17.12
1917	3.36	3.29	6.40	7.54	3.28	1.41	25.28
1918	2.38	4.22	4.56	1.47	5.18	4.06	21.87
1919	2.58	5.76	1.43	.74	3.69	2.98	17.18

From these results it will be seen that the rainfall amounted to 5.8 inches in May, which was exceptionally heavy. This was greater than the rainfall in any one of the nineteen years previous for the month of May. It can also be stated that the rainfall in July was lighter than for any other July in the past nineteen years.

According to the Bureau of Industries the rainfall throughout the Province for the five months from March to July inclusive, was excessive in March, April and May, while in June and July it was below their respective normals.

VALUE OF THE ANNUAL AGRICULTURAL PRODUCTION IN CANADA.

It might be well to draw attention to the great value of field crops in Canada. According to the Canada Year Book for 1918 the following table "presents the results of calculations of the gross total value of the annual agricultural production of Canada for each of the years 1915, 1916, and 1917. The values are calculated from the average prices received by farmers. They are necessarily gross values, because it is impossible to distinguish between the use of crops as materials for other kinds of production, such as the feeding of live stock, nor to allow for the costs of production.

Description	1915	1916	1917
	$	$	$
Field Crops	825,371,000	886,495,000	1,144,637,000
Farm Animals	73,958,000	110,201,000	156,569,000
Wool	3,360,000	4,440,000	7,000,000
Dairy Products	146,005,000	152,816,000	232,822,000
Fruits and Vegetables	35,000,000	35,000,000	40,000,000
Poultry and Eggs	35,000,000	35,000,000	40,000,000
Gross Total Value	1,118,694,000	1,223,952,000	1,621,028,000

If to the estimated value of agricultural production in 1917, viz., $1,621,028,000, be added for land $2,792,229,000, for buildings $927,548,000, for implements $387,079,000, and for live stock $1,102,261,000, the total estimated agricultural wealth of the Dominion of Canada for 1917 amounts to $6,830,145,000."

According to the Bureau of Industries for 1917 the value of the field crops of Ontario, omitting pasture, was $333,353,438.

RESULTS OF CO-OPERATIVE EXPERIMENTS.

I wish to again emphasize the fact that the co-operative work of the Experimental Union is entirely voluntary on the part of the farmers. The experiments are conducted by the farmers themselves with the co-operation and advice of the Experimental Union. The fact that the work is voluntary undoubtedly is one of the greatest reasons for its successful development.

In 1919, as in previous years, the various experimenters conducted the tests according to suggestions furnished them, and reported the results of their individual experiments on blank forms which were sent along with the seed. The results of the co-operative experiments of the past year which were received at the College were submitted as usual to a very critical examination. For the summary reports which are presented at this time, only those reports which showed carefulness and reliability throughout were used. Many of these reports have been furnished by men who have had a large amount of practical experience on the farm, have had the advantage of a good education, and have had a careful training in the experimental work by conducting successful tests on their own farms in each of a number of years. It should be clearly understood that while only the good reports of carefully conducted experiments have been used for publication, many of those not included in the summary report show that the individual experimenters must have obtained a considerable amount of valuable information from their work, and in each of a number of cases a start with choice seed of varieties particularly suited to their own local conditions. It occasionally happens that owing to some accident an experiment may have been injured so that the results could not be used in a summary report, but the experiment may have given useful lessons to the farmer conducting the test. It is certainly true that experimenters and many other farmers obtain much information from the tests which are conducted in addition to that included in the summary report such as the one here submitted.

In every instance an experimenter received advisory directions for conducting the co-operative work, and was asked to give his decision as to the relative standing of the different varieties, mixtures, fertilizers, manures, quantities of seed per acre, etc., after everything had been taken into consideration. The report here presented includes a summary of the answers to this inquiry, which is given in the tabulated results under the heading of "Comparative Value."

VARIETIES OF FARM CROPS.

There are altogether too many varieties of some of the classes of farm crops grown in Ontario. In a few instances the Experimental Union has had a marked influence in eradicating practically all of the varieties with the exception of the ones which gave the most satisfactory results of those distributed for co-operative experiments. This is particularly true in the case of barley, spring wheat and rye. The Experimental Union is also exerting a great influence in the reduction of varieties of oats and winter wheat by the introduction of new varieties originated at the College. These have not been distributed for as long a time as the barley, but in a few years it is to be hoped that many of the varieties of these two classes of grains will be eliminated, and the more profitable kinds will be grown on practically all of the Ontario farms.

It certainly does seem unfortunate that agents go through the country selling new and untried varieties of grains, and that farmers buy these seeds at comparatively high prices when they would usually get much better results by confining themselves to those kinds which have proven to be the most suitable for growing in Ontario.

On April 4th, 1919, the following bill received its first reading in the Ontario Legislature, but owing to some technicality did not receive its final reading:

1. This Act may be cited as The Seed Testing Act.
2. It shall not be lawful for any dealer or agent to sell, barter or exchange any variety of wheat, oats, barley, rye, buckwheat, field peas, field beans or potatoes for seed purposes, unless and until the variety so offered for sale has been grown experimentally by the Ontario or Dominion Department of Agriculture for at least three years.
3. Any such dealer or agent offering any variety of such seed for sale shall be required to show a certificate signed by such person as may be designated by the Minister, setting forth the fact that such variety has been so grown, and stating, further, the results of the experiment.
4. Any person who violates any provision of this Act shall then, upon summary conviction thereof, be liable to a penalty of not less than $10 nor more than $50.
5. Penalties imposed by or under the authority of this Act shall be recoverable under The Ontario Summary Convictions Act.

The Agricultural College and the Experimental Union conduct experimental work with those classes of crops which are now used on fully 90 per cent. of the cultivated land of the Province. The following gives the summary results in tabulated form of the different varieties of grain crops tested throughout Ontario in 1919:

Experiments	Varieties	Comparative Value	Yield per Acre		
			Straw (tons)	Grain (bus.)	Grain (lbs.)
Oats	O.A.C. No. 72	100	1.19	41.46	1,410
	O.A.C. No. 3	71	1.05	38.92	1,323
Six-rowed Barley and Emmer	O.A.C. No. 21	100	.42	23.33	1,120
	Common Emmer	88	.59	22.30	1,070
Hulless Barley	Guy Mayle	100	1.21	28.55	1,713
	Black Hulless	100	1.38	26.52	1,591
Winter Emmer and Winter Barley	Winter Emmer	100	.51	21.50	1,720
	Winter Barley	92	.38	19.75	1,580
Spring Wheat	Wild Goose	80	1.19	19.75	1,185
	Marquis	100	1.21	18.96	1,138
Winter Wheat	O.A.C. No. 104	100	1.83	28.93	1,736
	Improved Imperial Amber	86	1.81	28.18	1,691
	Improved Dawson's Golden Chaff	90	1.98	26.97	1,618
	Kharkov	43	2.15	23.54	1,412
	Yaroslaf	48	2.05	23.39	1,403
Spring Rye	O.A.C. No. 61	100	.87	27.50	1,540
	Common	67	.73	23.40	1,310
Winter Rye and Winter Wheat	Petkus Rye	100	1.35	21.14	1,184
	Improved Imperial Amber	93	1.16	19.40	1,164
Buckwheat	Rye	100	.60	30.28	1,454
	Silver Hull	100	.92	20.55	986
Field Peas	New Canadian Beauty	100	1.21	22.73	1,364
	Potter	93	1.22	22.20	1,332
	Early Britain	83	.94	21.21	1,273
Field Beans	Pearce's Improved Tree	100	1.17	25.00	1.500
	American Wonder	62	.77	15.00	900
	Elliott Pea	43	.94	14.43	866
Soy or Soja Beans	Habara	100	.88	17.77	1,066
	Brown	88	.73	12.89	774
	O.A.C. No. 81	75	.63	12.23	734

In column number three of the tabulated results of the grain crops here given, attention is called to the fact that the comparative value was made up from the answers received from the farmers who conducted the experiments after they had taken everything into consideration. In the fourth column, yield of straw per acre represents the total crop less the amount of grain, and, therefore, includes the chaff with the straw. The yield of grain is given in pounds as well as in bushels per acre in order to make the results clearly understood, and that certain comparisons may be made between the different classes of crops as well as between the varieties of each class in a season such as we had in 1919. Definite determinations can be made between the varieties of each class of farm crops as they were grown on the same farm and under similar conditions. Caution, however, should be exercised in comparing one class of farm crops with another as it should be understood that these have been grown on different farms. Owing to the great variation in the weight per measured bushel of different classes of crops, it is easier to compare the weight in pounds than in bushels of grain per acre. In working out the number of bushels per acre, the standard weights per measured bushel have been used for each class of crop.

Varieties of Oats. Anything that can be done to increase the average yield per acre or to decrease the percentage of hull by one per cent. would make a difference in the value of the oat crop of approximately 1,000,000 dollars. Much has already been done to improve the oats of Ontario by the introduction of varieties which are superior to the old kinds in both productiveness and quality.

Only five years ago 68 per cent. of the oats grown in Ontario was of the Banner variety, according to reports received from farmers in answers to an inquiry sent out by the Experimental Union. This variety was much superior to many of the old kinds such as, for instance, the Black Tartarian and the Egyptian. During the last five years the O.A.C. No. 72 has increased very rapidly in general cultivation throughout the Province.

The following table gives the average results of a few prominent varieties of oats for a period of thirteen years:

Varieties	Days to Mature	Percentage of Hull	Yield per Acre	
			Straw	Grain
			tons	bus.
O.A.C. No. 72	110	28.2	2.16	85.7
O.A.C. No. 3	101	23.9	1.87	83.6
Banner	111	30.2	2.06	74.9
Daubeney	103	25.0	1.86	74.4

In the results conducted at the Ontario Agricultural College, as presented in the foregoing table, it is shown that the O.A.C. No. 72 variety is a strong, vigorous grower, producing a heavy yield of both grain and straw, and that the grain is of excellent quality for a late variety. Other varieties of late oats such as the Tartar King, the Storm King, the Egyptian, and the Elmhurst usually have from 35 to 36 per cent. of hull. It is interesting to note that the Elmhurst oat, which was advertised extravagantly and sold extensively in small lots throughout Ontario in the fall and early winter of 1918, has proven to be very similar to the Tartar King, which has been practically discarded in Ontario. The Elmhurst oat was one of the poorest in quality of all the entries at the Provincial Winter Fair in 1918, and again in 1919, the percentages of hull in the samples entered by the introducer of this variety being 32.9 per cent. in the former, and 38.4 per cent. in the latter year. In the experiments at Guelph in 1919, which was the first opportunity of testing this oat, the grain gave a fair yield, but was of very poor quality, being one of the thickest in the hull of all of those under experiment. On the average, the percentage of hull is about 24 per cent. for O.A.C. No. 3, 28 per cent. for O.A.C. No. 72, and 30 per cent for Banner oats.

The following table gives the average yield per acre of the two varieties of oats used for the co-operative experiments in each of the past seven years, also the average results of the 601 successfully conducted tests throughout the Province for the same period:

Varieties	Average Yield of Oats per Acre (Bus. by weight)							
	1913	1914	1915	1916	1917	1918	1919	Ave. 7 yrs. 601 tests
O.A.C. No. 72	52.1	52.4	52.9	47.0	45.9	54.2	41.5	49.4
O. A. C. No. 3	43.3	49.0	49.1	45.6	41.2	46.1	38.9	44.7

It will be seen that, without an exception, the O.A.C. No. 72 oat has surpassed the O.A.C. No. 3 in yield of grain per acre. It should be remembered that the O.A.C. No. 3 matures nine or ten days earlier than the O.A.C. No. 72 variety.

O.A.C. No. 21 Barley and Common Emmer. In each of seven years we have distributed throughout Ontario for co-operative experiments the O.A.C. No. 21 barley and the Common Emmer, in order to test under uniform conditions these two crops. In previous experiments we found that Emmer was a close rival of barley in yield of grain per acre. The following gives the average results of the co-operative experiments in each of the past seven years:

Varieties	Average Yield in Pounds of Grain per Acre							
	1913	1914	1915	1916	1917	1918	1919	Ave. 7 yrs. 109 tests
O.A.C. No. 21 Barley ..	1613	1714	2022	1220	1794	2138	1040	1649
Common Emmer	1191	1359	1673	1080	1705	1566	1000	1368

It will be seen that the O.A.C. No. 21 barley surpassed the Common emmer in yield of grain per acre in the co-operative experiments conducted throughout the Province in each of seven years.

It might be stated that emmer is a species of spring wheat in which there is not a clear separation of the chaff and the grain in threshing. The grain which is still surrounded by the chaff is usually ground into meal and fed to farm stock. This has a feeding value somewhat similar to that of barley. On the average, barley has about 15 per cent., emmer 20 per cent., and oats 30 per cent. of hull.

Hulless Barley. Fifteen different varieties of hulless barley have been under test at the Agricultural College. Most of these varieties have proven to be rather weak in the straw, and have given unsatisfactory results. The Guy Mayle has been one of the best all-round varieties. In each of the past sixteen years this variety and the Black Hulless have been distributed throughout Ontario for co-operative experiments to give every person an opportunity of securing some good seed of the Guy Mayle if interested in this class of barley. The following gives the average results of the co-operative experiments over Ontario for 1919, and also for the average of the past sixteen-year period:

Varieties	Yield of Grain per Acre (bushels)	
	1919	Average 16 yrs. 203 tests
Guy Mayle..	26.5	24.3
Black Hulless......................................	28.6	23.9

It will be seen that although the Black Hulless gave a larger yield in 1919, the Guy Mayle, for the average of the whole period, has taken the lead by nearly one-half bushel of grain per acre. The Guy Mayle variety is one of the stiffest strawed varieties of all those which have been under test at the College.

Winter Emmer and Winter Barley. There were only four co-operative experiments in 1919 with Winter Emmer and Winter Barley throughout Ontario. The average of the four experiments was 1,720 pounds of grain for the Winter Emmer and 1,580 pounds for the Winter Barley, or an average of 140 pounds per acre in favor of the former. In favorable years each of these grains gives a large yield per acre. They are both, however, somewhat more tender than winter wheat, and in severe seasons are apt to be considerably winter killed.

Spring Wheat. In 1919, 361,150 acres and in 1918, 351,423 acres were used for spring wheat in Ontario. These are about double the number of acres used for spring wheat in Ontario in the average of the ten years previous. As the present price of wheat is higher than it has been for some time past, it is quite probable that the acreage for spring wheat will again be high in 1920.

In each of the past seven years the Wild Goose and the Marquis varieties have been distributed over Ontario for co-operative experiments. The following table gives the average yield of grain per acre for each of these varieties in the co-operative tests in each of the last seven years and for the whole period:

Varieties	Average Yield of Grain per Acre (Bus. 60 pounds)							
	1913	1914	1915	1916	1917	1918	1919	Ave. 7 yrs. 119 tests
Wild Goose	20.3	19.1	20.3	20.4	20.8	22.9	19.8	20.5
Marquis	20.8	17.8	19.1	17.2	20.1	23.1	19.0	19.6

It will be seen that the Wild Goose has given an average of about one bushel per acre per annum over the Marquis. It should be clearly understood that while the Wild Goose is a heavy yielding variety, it is a Durum wheat, and is more suitable for the manufacture of macaroni than of bread. The Marquis wheat is of excellent quality for bread production at home or abroad.

Winter Wheat. The Dawson's Golden Chaff is still one of the most popular wheats throughout Ontario from the farmers' standpoint. It is stiff in the straw and is a heavy yielder of grain, although the grain is more suitable for pastry than for bread production.

In order to improve the Dawson's Golden Chaff, especially in quality of grain, crosses were made between the Dawson's Golden Chaff and the Bulgarian varieties at the Agricultural College. These crosses have been carefully selected and tested for a number of years past. One hybrid known as the O.A.C. No. 104 has given particularly good results, both at the College and throughout Ontario. The following gives the average results at the College of the O.A.C. No. 104 in comparison with each of its parents for a period of nine years:

Varieties	Average of Nine Years' results		
	Weight per Measured Bushel	Yield per Acre	
		Straw	Grain
	pounds	tons	bushels
O.A.C. No. 104	59.1	2.69	47.6
Dawson's Golden Chaff....................	59.0	2.37	44.6
Bulgarian	59.3	2.55	39.4

Not only has the O.A.C. No. 104 proven to be a large yielder per acre, but it is a vigorous grower, and has shown itself to be more hardy than either of its parents. It is a white wheat with a white chaff and beardless head.

Five varieties of winter wheat have been distributed in each of the past three years for the co-operative experiments. The following table gives the average yield of grain per acre of each of these varieties for each of the three years and for the whole period:

Varieties	Yield of Grain per Acre (bus. by weight)			
	1917	1918	1919	Ave. 3 years 71 tests
O.A.C. No. 104	23.7	25.5	28.9	26.0
Imperial Amber	22.9	23.0	28.2	24.7
Dawson's Golden Chaff	21.5	25.3	27.0	24.6
Yaroslaf	17.6	21.5	23.4	20.8
Kharkov	19.3	19.2	23.5	20.7

It will be seen that the O.A.C. No. 104 variety of winter wheat gave the highest average yield per acre in the co-operative experiments in each of the past three years, the average being from 1.3 to 1.4 bushels per acre more than that of the Imperial Amber or the Dawson's Golden Chaff. It will, therefore, be seen that the O.A.C. No. 104 has proven more productive than the Dawson's Golden Chaff both in the experiments at the College and in the co-operative tests throughout the Province.

Spring Rye. For nine years in succession, two varieties of spring rye have been distributed over Ontario for co-operative experiments. The average yields in bushels of grain per acre in each of these years and the average for the whole period are as follows:

Varieties	Average Yield of Grain per Acre (bus. by weight)									
	1911	1912	1913	1914	1915	1916	1917	1918	1919	Ave. 9 yrs. 37 tests
O.A.C. No. 61	17.9	26.8	20.0	25.4	18.2	42.1	22.5	20.5	27.5	24.5
Common	16.3	24.5	15.9	25.0	12.5	36.4	20.4	20.0	23.4	21.6

It will be seen that without a single exception the O.A.C. No. 61 has surpassed the Common variety of spring rye in each of the nine years. In the average for the whole period, the O.A.C. No. 61 has taken the lead by practically three bushels per acre per annum. This variety was originated at the College, and has given better results than any other variety of spring rye in the experiments at Guelph.

Winter Rye and Winter Wheat. Petkus winter rye was distributed in the autumn in each of the past five years, and was grown in comparison with the Imperial Amber winter wheat in each of these seasons. In 1917, however, there were no good reports of successfully conducted experiments. The average results in pounds of grain per acre are therefore given for each of the four years as follows:

Varieties	Average Yield of Grain in Pounds per Acre				
	1915	1916	1918	1919	Average 4 years 21 tests
Petkus Winter Rye	2700	1777	2020	1184	1920
Imperial Amber Winter Wheat	2320	1457	1157	1164	1525

Without exception the winter rye has given a higher yield per acre than the winter wheat. It is found in experiments at the College over a long series of years that the varieties of winter rye are more hardy than any of the varieties of winter wheat under test.

Buckwheat. In 1919, 178,569 acres were used for the growing of buckwheat in Ontario. In the experiments at the College four varieties of buckwheat have been grown under similar conditions in each of fourteen years, and the Rye or Rough buckwheat has given an average of about eight bushels per acre per annum over any other variety.

In each of ten years, two varieties of buckwheat have been grown in an experimental way by Ontario farmers. The following gives the average results for 1919 and for the ten-year period:

Varieties	Average Yield of Grain per Acre (bus. by weight)										
	1908	1909	1910	1911	1912	1913	1915	1917	1918	1919	Ave. 10 yrs. 36 tests
Rye Buckwheat	30.3	21.1	21.0	15.3	37.7	24.0	27.7	33.3	37.8	30.3	27.9
Silver Hull Buckwheat	24.7	17.8	14.7	11.0	32.8	19.7	22.7	10.8	28.1	20.6	20.3

It will be seen that the Rye or Rough buckwheat is a very high yielder. It surpassed the Silver Hull in each of the ten years of the co-operative tests. This variety is grown quite extensively in Nova Scotia, but as yet only to a limited extent in Ontario. The grain is somewhat rough, the hull is rather thick, and the flour has a yellowish tinge. It is, however, a large yielder of grain of fair quality.

Field Peas. This crop is still an important one in Ontario, and the acreage has been increasing in each of the past two years. In 1919 the area used was forty-one per cent. greater than in 1917.

In each of four years three varieties of field peas have been used for the co-operative experiments, and the results for each year and for the four-year period are as follows:

Varieties	Average Yield of Grain per Acre (bus. by weight)				
	1916	1917	1918	1919	Average 4 yrs. 183 tests
Early Britain	20.8	21.8	28.8	21.2	23.2
Potter	22.5	21.4	25.7	22.2	23.0
Canadian Beauty	22.3	21.2	25.1	21.7	22.8

The average returns show that these varieties have all made good records. In no instance has any variety given an average yield of less than twenty bushels per acre in any one of the four years. The Potter variety, which is a medium-sized white pea of excellent quality, came the highest in yield in 1919, and was a close rival of the Early Britain for the four-year period. The Early Britain, which has given the highest average yield, is a brown-dented pea, the interior of which has a rich yellowish appearance.

Field Beans. In 1917 and in 1918 the acreage of beans had about doubled in Ontario in comparison with a few previous years. In 1919, however, the acreage dropped to about one-fifth of that of the two former seasons. Owing to very abnormal weather conditions in each of the past four years, the yields per acre have been considerably below normal.

In each of the past two years, three varieties of beans have been used for the co-operative experiments. The Pearce's Improved Tree gave decidedly the highest yield in each of these years. The average results for the two years' experiments in bushels of grain per acre per annum are as follows: Pearce's Improved Tree, 22.1; American Wonder, 15.3; and Elliott Pea, 14.9. The Pearce's Improved Tree bean requires a little longer season of growth than the pea varieties. In those localities, however, where it can be grown successfully, it produces a high yield of large white beans of excellent quality.

Soy Beans. The past season has been more favorable for growing the Soy beans than any one of the three years previous. Three varieties of Soy beans have been distributed in each of the past two years. The following gives the average yield of threshed beans in bushels per acre per annum: Habara, 14.7; O.A.C. No. 81, 11.9; and Brown, 10.4. The Soy beans, when ground, are about equal for feeding purposes to cotton seed meal. They are richer than any other grain grown in Ontario and a small amount greatly helps the meal ration, especially for dairy animals.

Grains Grown in Combination for Grain Production.

For a number of years in succession experimental work has been conducted at the College in testing various combinations of grain for green fodder, for hay and for grain production. The results of these experiments have been both interesting and important, and have been reported from time to time in the College publications. It was found that a combination of varieties of the same class of grain gave no appreciable advantage in increase in yield per acre. It was also found that certain combinations of different classes of grain gave practically no advantage while others furnished considerable increase. One of the most important results obtained was from a combination of oats and barley grown in the proper proportions of the right varieties which gave a yield of slightly over two hundred pounds of grain per acre above either grain grown separately in the tests which were conducted over a series of years.

Based on the information of the experiments at the College, co-operative tests were arranged in which different combinations were tested throughout the Province. In an experiment which was conducted for five years, and which was completed in 1909, different varieties of oats, barley, and spring wheat were grown in combination of two and three kinds of grain together. The average results of the five years' co-operative experiments show that one bushel of the Daubeney oats and one bushel of the Mandscheuri barley gave a higher yield of grain per acre than any of the other mixtures used in the experiment.

In 1910 a co-operative experiment was started for the testing of three different proportions of oats and barley in order to find out which one would give the highest yields on the average, and on the different soils throughout the Province. In the results of this experiment for seven years the following average yields in pounds of grain per acre per annum were obtained: 1 bushel oats and 1 bushel barley, 1,691; 1½ bushels oats and 1½ bushels barley, 1,665; and ½ bushel oats and ½ bushel barley, 1,357. It will be seen that one bushel of oats and one bushel of barley, making a combination of two bushels per acre, gave on the average a greater yield per acre than either the lighter or the heavier seeding.

In the results of experiments carried on at the College extending over a period of fifteen years, a combination of one bushel of oats and one bushel of barley, by weight, has produced the largest yield of grain per acre.

In the experiments at the College extending over a period of years, a standard mixture of oats and barley gave the highest returns, and when any other grain was added to this mixture it caused a decrease in the yield per acre. In 1918 a co-operative experiment was started with the object of trying to find out whether this would hold true throughout the Province, and especially to let each experimenter find out for himself the actual facts in regard to the mixtures. No results were obtained for that year, but in 1919 the results of four experiments have been secured, the average being as follows:

Mixtures	Yield per acre	
	Straw (tons)	Grain (lbs)
Oats 1 bushel, Barley 1 bushel	1.24	1473
Oats 1 bushel, Barley I bushel, Goose Wheat ½ bushel	1.21	1398
Oats 1 bushel, Barley 1 bushel, Golden Vine peas ½ bushel	1.16	1310

The results over Ontario in 1919 correspond with the average results at the College for fifteen years, viz., that, if either peas or goose wheat is added to a standard mixture of oats and barley, the tendency is to decrease the yield of grain in the resulting crop. This test will likely be continued in the co-operative experiments for several years.

VARIETIES OF CORN FOR HUSKING.

The Ontario Corn Growers' Association selected seven varieties of corn suitable for different parts of Ontario. These included four dent and three flint varieties. In order that these might be tested on individual farms, seed of the seven varieties has been distributed in each of the past four years for co-operative tests throughout the Province. Owing to unfavorable weather conditions in some of these years the number of complete tests of shelled grain has not been large. In 1919, however, there were six tests, and in the four years, eighteen experimenters have sent in complete and satisfactory results. The following table gives the average yields per acre of the whole crop, and of the shelled grain of each of the seven varieties in 1919, and for the four-year period:

Varieties	Average Yield per Acre			
	Whole Crop (tons)		Grain (bushels)	
	1919	Average 4 years 28 tests	1919	Average 4 years 18 tests
Golden Glow	7.27	9.40	92.5	65.7
White Cap Yellow Dent	8.01	9.02	89.0	63.6
Wisconsin No. 7	7.94	9.96	84.7	59.5
Bailey	6.84	8.61	84.2	57.6
Compton's Early	7.00	8.92	71.2	54.4
Longfellow	7.04	8.51	68.1	53.3
Salzer's North Dakota	6.76	8.16	61.9	50.4

It will be seen that the yield of grain per acre in 1919 has been decidedly higher than the average for the last four years in the case of each of the varieties. It will also be noticed that in yield of shelled grain per acre the relative order in 1919 is exactly the same as that for the four-year period. The Golden Glow gave the highest yield of grain per acre in each of three out of the four years. Not only has it given a good yield of grain per acre, but on the average it has also given a good yield of whole crop, being second only to the Wisconsin No. 7 in this respect. The first four varieties on the list are dents and the three lowest yielding varieties of grain are flints.

FIELD ROOTS.

In the past season co-operative experiments were conducted with mangels, sugar beets, swede turnips, fall turnips and carrots. About thirty per cent. more good reports were received in 1919 than in 1918. Owing to the great scarcity of labor, however, farmers still find it difficult to grow the usual acreage of roots in connection with their farm practice. They have also found it difficult to experiment largely with the root crops, owing to the fact that they require rather more labor in cultivation than do the cereals. The average results are here presented in tabulated form:

Experiments	Varieties	Comparative Value	Yield per Acre (tons)
Mangels	Sutton's Mammoth Long Red	100	33.59
	O.A.C. No. 2 Strain Yellow Leviathan	93	32.22
	Keith's Prize Taker	71	28.95
Sugar Mangels	Carter's Sugar	100	26.27
	Bruce's Giant White Feeding	95	25.15
Swede Turnips	Garton's Superlative	95	24.38
	American Purple Top	100	24.34
	Steele, Briggs' Good Luck	82	23.28
Carrots	Bruce's Mammoth Intermediate Smooth White	100	20.13
	Rennie's Mammoth Short White	96	19.93

Varieties of Mangels. There are four distinct types of mangels grown in general cultivation in Ontario, viz., long, intermediate, globe and tankard. The globe varieties are grown only to a very limited extent at present as the yield is usually rather low and the quality is generally inferior to that of the intermediate class. In the experiments at Guelph, varieties are tested each year representing each of the four classes. The intermediate strain has given particularly good results in recent years in both the experiments at Guelph and in the co-operative tests throughout Ontario. This is particularly true of the Yellow Leviathan variety.

In 1919 three varieties of mangels were used for co-operative experiments, including one long, one intermediate and one globe. The average results show that the highest yield was made by the Long Red and the lowest yield by the Globe variety. In the average of the co-operative experiments for the eight years previous to 1919, the three varieties used gave yields in bushels per acre per annum as follows: Yellow Leviathan 26.5, Sutton's Mammoth Long Red 26.3 and Ideal 26.2. The Yellow Leviathan is an intermediate and the Ideal a tankard variety.

Sugar Mangels. Sugar beets for feeding purposes and sugar mangels refer to the same class of roots which are intermediate between mangels and the true sugar beets. As a rule, mangels have about five per cent., sugar mangels about ten per cent. and sugar beets about sixteen per cent. of sugar. The sugar mangels grow more out of the ground than sugar beets and are more easily harvested, but do not generally yield quite as much as the leading varieties of mangels.

In each of the past three years the Bruce's Giant White Feeding and the Carter's Improved White Sugar varieties have been tested in connection with the Experimental Union work. In the average of nineteen tests made in the three years, the former gave an annual yield of 22.3 and the latter 20.5 bushels per acre. It will be seen that the average results for the three years are in favor of the Bruce's Giant White Feeding, while the yield for 1919 is slightly in favor of the Carter's Improved White Sugar. The Bruce's Giant White Feeding has made a high record at the College, being the heaviest producer of fourteen varieties of sugar mangels which have been under test for the last seven years.

Swede Turnips. In 1919, 85.342 acres were used for turnip production in Ontario. The crop is used largely for feed for farm stock and to a limited extent for table use. In some sections of the Province, especially in Wellington County, many car loads are exported annually to some of the large eastern cities in the United States. The Steele, Briggs' Good Luck variety which has generally given good results in the past few years, comes the lowest this season with about one ton per acre less than Garton's Superlative which was entered in the co-operative experiments in 1919 for the first time. The American Purple Top occupies second place, both this year and in the average of the four years previous.

Fall Turnips. Only a very small quantity of fall turnips are grown in Ontario and no satisfactory co-operative reports were received of this experiment in 1919. In past years the Purple Top Mammoth and the Red Top White Globe have proven two of the leading varieties.

Field Carrots. The intermediate white field carrots are very similar in their growth, although they are sold under different names by Ontario seedsmen. In the average of the past four years, the Rennie's Mammoth Short White has given 17.8, and the Bruce's Mammoth Intermediate Smooth White 17.7 tons per acre per annum in the average results of twenty-two tests, ten of which were for 1919 and four for each of the three former years.

VETCHES AND GRASS PEAS.

Quite a large number of varieties of leguminous crops, including vetches, soy beans, grass peas, cow peas, etc., have been under experiment at the Agricultural College for a number of years in succession. For the co-operative experiments three prominent varieties were selected. These have now been tested by Ontario farmers in each of the past twenty-one years. Owing to unfavorable weather conditions no reports were received in the years 1912 and 1917. In all other years, from one to nine good reports were received. Although the number of successfully conducted tests was not large, the accumulative results which now form the average of about sixty tests, show in a pretty definite way the comparative yields of green fodder of these three crops. The average results of all the co-operative experiments in the nineteen-year period in yield of green fodder per acre per annum are as follows: Hairy Vetches 8.6, Grass Peas 7.5 and Common Vetches 6.7. It will be seen that for the entire period the Hairy vetches have been the most productive. This is a leguminous crop and the feed is of excellent quality, containing a large amount of food materials, whether used in the form of green fodder or of hay. Unfortunately, the seed of Hairy vetches is very high, especially during the last five years. It is quite possible that the Hairy vetch seed might be obtained locally in some places in the Niagara Peninsula.

VARIETIES OF SWEET CORN FOR HOME USE.

No less than fifty varieties of sweet corn have been tested at the Ontario Agricultural College. These have been studied from the standpoint of fodder in the field and also for the production of ears for table use. There is a marked difference, not only in the growth of the plants, but also in the size of ears, the number of ears, the flavor and juiciness, etc., of the different varieties.

For the co-operative experiments a few varieties have been pretty thoroughly tested over Ontario for table use. These have included the Golden Bantam, the Stowell's Evergreen, the White Cory and the Malakhoff. Of these varieties the Golden Bantam proved the most popular, although the Stowell's Evergreen is a substantial variety which is used rather more for canning than for home use. These two varieties have been used in the co-operative experiments in each of the past seven years. The following table gives the average results for 1919, and for the average of the past seven years, including in all, one hundred and thirty-six separate tests:

Varieties	Comparative Value		Number of Ears		Number of days until ready for table use		Table Quality			
							Flavor		Juiciness	
	1919	Ave. 7 yrs.	1919	Ave. 7 yrs.	1919	Ave. 7 yrs.	1919	Ave. 7 yrs.	1919	Ave. 7 yrs.
Golden Bantam	100	100	135	138	79	90	100	100	100	100
Stowell's Evergreen	83	75	124	122	87	102	77	76	97	91

The comparative results show that the Golden Bantam is ready for use twelve days earlier than the Stowell's Evergreen, also that the Golden Bantam has on an average about thirteen per cent. more ears than the Stowell's Evergreen on the same area of land. In every one of the seven years, the Golden Bantam proved more popular with the experimenters than the late variety. The Golden Bantam is a juicy corn of excellent flavor and is highly recommended for use in the gardens of Ontario. By planting the Golden Bantam at three different dates, allowing a couple of weeks between each two dates of planting, excellent green corn can be secured for table use throughout a comparatively long season. This variety has been very extensively introduced throughout the Province by the efforts of the Experimental Union.

VARIETIES OF POTATOES.

According to the Ontario Department of Agriculture, there were 157,286 acres of potatoes grown in Ontario in 1919. This is about ten thousand acres less than in 1918 and about sixteen thousand acres less than in 1915, but it is only about four hundred acres per annum lower than the average of the past thirty-six years.

In 1919, as in each of the last seven years, an inquiry was made from hundreds of potato experimenters, regarding the most extensively grown varieties in the separate counties of Ontario. In all, 37 varieties were mentioned one or more times as being the most extensively grown in 1919, forty-four in 1918, sixty in 1917, fifty-seven in 1916, thirty-nine in 1915, fifty-one in 1914, fifty-seven in 1913 and fifty-eight in 1912. In 1919, and in the average of the past seven years, the varieties mentioned the greatest number of times as being the most extensively grown in the different counties of Ontario are as follows:

Varieties	1919	Average 7 years 1913–1919
Irish Cobbler	113	66
Green Mountain	54	28
Delaware	19	28
Rural New Yorker No. 2	16	25
Carman	17	23
Extra Early Eureka	13	14
Early Rose	6	13
Empire State	9	12
Carman No. 1	8	10
Dooley	8	8
Beauty of Hebron	4	7
Early Ohio	6	7
American Wonder	5	7
White Elephant	0	6

Some experimenters mentioned Carman, some Carman No. 1 and some Carman No. 3, and we recorded these exactly as reported. As the Green Mountain and the Delaware are frequently sold as the same variety, it will be seen that the Irish Cobbler and the Green Mountain have been mentioned the greatest number of times and these are followed by the Rural New Yorker No. 2. It will be observed that there are still far too many varieties of potatoes grown in Ontario. If only two or three of the best varieties were grown to the exclusion of all other kinds, the product would be more uniform and the average yield for the Province would be higher.

For the co-operative experiments, it was decided to distribute only two varieties of potatoes in the spring of 1918, viz., Irish Cobbler and Green Mountain, the former being an early and the latter a late variety. These two varieties are extensively grown and it is desirable that those sections of Ontario well suited for potato growing commercially confine themselves to one or two varieties. In 1919, 107 separate tests were successfully conducted throughout Ontario with the Irish Cobbler and the Green Mountain varieties of potatoes. In order to make the experiment as reliable as possible, the seed of each of these varieties was obtained from Southern Ontario and from Northern Ontario. The following gives the average results of the 107 co-operative tests made in the past year:

Varieties	Percentage of Disease				Results of Co-operative Tests								
	Leaf Roll		Mosaic		Percentage Rotten Potatoes			Percentage Small Potatoes			Average Yield of Total Crop per acre (tons)		
	1918	1919	1918	1919	1918	1919	Ave.	1918	1919	Ave.	1918	1919	Ave.
Irish Cobbler	5.7	1.4	3.0	....	.4	.2	.3	16.7	14.0	15.4	134.3	111.1	122.7
Green Mountain....	14.2	.9	33.6	....	.5	1.5	1.0	16.3	9.5	12.9	129.5	132.5	131.0

The average results of the Irish Cobbler and also of the Green Mountain varieties obtained from two different sources in each of the past two years, show that in 1918, the Irish Cobbler surpassed the Green Mountain by 5.2 and in 1919, the Green Mountain surpassed the Irish Cobbler by 21.4 bushels per acre. The difference in the results may be accounted for by the strains of the potatoes used, by the seasonal conditions or by the amount of Leaf Roll and Mosaic in the Green Mountain in 1918. The average results for the two years, show that the Green Mountain has given 8.3 bushels per acre per annum more than the Irish Cobbler.

In securing potatoes from two sources, care was taken to obtain seed as free from disease as possible. We are very pleased to state that the seed obtained in 1919 was entirely free from Mosaic and had a very small percentage of Leaf Roll. We are grateful for the potato inspection work carried out in the fields in each of the past two years through the co-operation of the Dominion and the Provincial Departments of Agriculture.

SOUTHERN AND NORTHERN GROWN SEED POTATOES.

An experiment has been conducted at the College for several years in succession by testing potatoes obtained from different sources. The main sources of seed have been Southern Ontario, Northern Ontario and New Brunswick. Seed potatoes obtained from one hundred and forty miles north of Guelph in the Muskoka District, near the Muskoka Lakes, have given higher yields per acre than those obtained from Southern Ontario or from New Brunswick. More recently, potatoes have been obtained from Algoma, Thunder Bay and Rainy River districts and these have given good results for seed purposes.

In 1919, two varieties of potatoes were obtained from Southern Ontario and also from Northern Ontario and these were carefully tested in a co-operative way throughout the Province. The average results of sixty-six reports of carefully conducted experiments received from over the Province are as follows:

Districts	Average Percentage of Disease				Average Yield of Potatoes Per Acre		
	Leaf Roll		Mosaic				
	1918	1919	1918	1919	1918	1919	Ave.
					Bus.	Bus.	Bus.
Northern Ontario..............	0.0	.9	2.2	0.0	142.8	134.6	138.7
Southern Ontario..............	24.9	1.4	5.1	0.0	123.9	128.5	126.2

It will be observed that the potatoes used in 1919 were particularly free from disease. It will also be seen that the northern grown seed gave an average yield per acre over southern grown seed of 18.9 bushels per acre in 1918 and of 6.1 bushels per acre in 1919.

Fertilizers and Manures With Farm Crops.

Within the past twenty-five years a large amount of co-operative experimental work has been conducted throughout Ontario in comparing stable manures and a number of commercial fertilizers with farm crops. The results of these experiments have been reported from time to time.

In 1919, co-operative experiments were conducted with manures and fertilizers on winter wheat, mangels and rape. Owing to the abnormal weather conditions, we have not received satisfactory reports of experiments with fertilizers when applied to mangels and to rape. The co-operative tests with manure and fertilizers with the winter wheat, belong to a series of tests started many years ago and which included oats, fodder corn, mangels, swede turnips and potatoes. It also included the application of manure and fertilizers with winter wheat, both in the autumn and in the spring. The co-operative work of the past year has been the application of manure and fertilizers in the spring to the winter wheat crop.

For the co-operative experiments the fertilizers and seeds have been sent from the College to experimenters each year. In all instances in this experiment the Nitrate of Soda and the Muriate of Potash were applied at the rate of 160 pounds per acre and the Superphosphate at the rate of 320 pounds per acre. A mixture or complete fertilizer was composed of one-third the amount of each of these fertilizers and was, therefore, applied at the rate of 213 1-3 pounds per acre. As early in the spring as the land was dry enough the fertilizers were made into a powdered condition by breaking any lumps which had been formed and were applied to their respective plots. The advice to the experimenters was to apply 500 pounds of average cow manure on one plot in each test, the application being equal to twenty tons per acre. The cow manure and the fertilizers were used as a top dressing. The following table gives, not only the average results of fertilizers and manure applied in the spring with winter wheat, but also fertilizers applied with a number of other farm crops:

Kind of Fertilizer Used	Fertilizer per Acre		Average Yield per Acre							
			Oats	Fodder Corn		Mangels	Swede Turnips	Potatoes	Winter Wheat Fertilizer applied	
				Total	Ears				Autumn	Spring
	Exact Weight	Approximate Cost before the War	5 yrs. 74 tests	8 yrs. 47 tests	8 yrs. 41 tests	5 yrs. 41 tests	5 yrs. 18 tests	5 yrs. 98 tests	8 years 22 tests	2 years 6 tests
	lbs.	$ c	bush.	tons	tons	tons	tons	bush.	bush.	bush.
Nothing	....	....	38.9	8.2	2.7	20.6	19.6	129.2	18.9	22.4
Nitrate of Soda	160	4.80	46.3	9.4	3.1	26.5	22.5	153.4	22.7	27.5
Muriate of Potash	160	4.00	43.8	9.4	3.0	24.6	23.7	160.8	22.3	28.8
Superphosphate	320	3.92	43.6	9.0	3.1	24.2	24.7	156.8	22.4	28.6
Complete Fertilizer	213	4.24	48.7	9.4	3.2	25.4	25.0	166.3	24.1	29.5
Potato Fertilizer	320	5.52	......	......	......	......	......	167.5	....	....
Royal Canadian	320	5.60	......	......	......	......	......	164.5	....	....
Cow Manure	40,000 (20 tons)	6.00	......	......	......	......	26.9	174.7	26.3	28.2

The cost of each fertilizer as given in the table represents approximately under normal conditions, previous to the war, the average cost per acre for the fertilizers as used in the co-operative experiments. The quotations were based on the factory prices for quantities of about one ton of each fertilizer. The twenty tons of cow manure would be about twenty good sized loads per acre, and manure in Guelph has been selling at fifty cents per load, which is probably about the average for the Province. It is exceedingly difficult to place a price on farmyard manure as, in most cases, it is not purchased, but is produced on the farm. Each person may place such value on the manure as he deems expedient and study the results according to his own circumstances. It should be stated that the freight on the fertilizers and the application of both the fertilizers and the manure are not taken into consideration in the foregoing statement, nor yet is there any account made of the influence of the different fertilizers and the manure upon the land after the first season, except in the later experiments. The results of fertilizers with farm crops over a series of years are studied in connection with the field experiments at the College.

Each experimenter was asked to conduct his fertilizer test on the average soil of his farm. The results here presented are, therefore, for the average soils of Ontario. On some farms the fertilizers paid much better than they did on others. Every farmer who uses fertilizer should know as much as possible regarding the requirements of his own particular farm. The results here presented speak in a general way regarding the use of these fertilizers under the varying conditions of the farm lands of the Province and should furnish valuable suggestions.

A MEMBER: What is the percentage of hull in the Daubeney oat?

DR. ZAVITZ: The Daubeney has about twenty-five per cent., the O.A.C. No. 3 about twenty-four per cent., or one per cent. less than the Daubeney.

A MEMBER: Does the O.A.C. No. 3 oats yield equally well in all districts?

DR. ZAVITZ: No, it is not equally suitable for all sections of the Province, hence the importance of testing it and the other leading varieties through the medium of the Experimental Union. This gives every farmer an opportunity to find out for himself as to its suitability for his own particular farm. It does exceptionally well in new Ontario where a very early oat is required. At the Monteith farm it has given excellent results and has been grown extensively throughout many sections of new Ontario where it has also done very well, indeed. As the O.A.C. No. 3 is ten days earlier than the Banner and the O.A.C. No. 72, it is not only suitable for Northern Ontario, but is one of the very best varieties to mix with barley when it is desirable to grow these two kinds of grain in combination. It is also a desirable variety for people who wish a very early oat, especially where there is apt to be a considerable amount of rust or in cases where the soil has a tendency to produce an extra large amount of straw. The O.A.C. No. 3 variety has only an average amount of straw and often does well on fairly rich soil.

A MEMBER: Is the O.A.C. No. 72 variety of oats generally suitable for all sections?

DR. ZAVITZ: The O.A.C. No. 72 variety of oats is a general purpose variety, and is suitable for the greater part of old Ontario. In 1918, for instance, it took about twice as many first prizes as the Banner, and about as many first prizes as all of the other varieties which were entered in the Standing Field Crop Competitions. In a few instances, the Banner gave higher returns than the O.A.C. No. 72.

On a show of hands at the meeting, it was found that a large number had grown the O.A.C. No. 72, a large number the Banner and a smaller number the O.A.C. No. 3.

A MEMBER: Does the O.A.C. No. 72 grow too coarse a straw?

DR. ZAVITZ: It is a strong, vigorous grower producing rather more straw than the Banner and is more particularly suitable for a soil which is not exceptionally rich. It has a comparatively stiff straw. Ontario farmers generally like a variety of oat which is a strong vigorous grower. The straw proves of much service in a live stock country like Ontario where the farm stock is kept in the stables during the winter season. In this respect it is quite different from the west where in very many instances a rather small strawed variety is desired as the straw is frequently burned in the stack.

A MEMBER: Is the O.A.C. No. 3 a variety that will do well on a strong soil?

DR. ZAVITZ: Yes. In the average results for twelve years at the College, the O.A.C. No. 3 gave 1.9 tons, the Banner 2.0 and the O.A.C. No. 72, 2.2 tons of straw per acre. The straw of the O.A.C. No. 3 is of good quality and the percentage of hull of the grain is less than that of any one of about three hundred named varieties obtained from different parts of the world.

A MEMBER: Did you ever try growing the Abundance?

DR. ZAVITZ: Yes, we have grown it for years. In the experiments at the College it stands twentieth in average yield per acre amongst thirty-nine varieties grown for 5 years in succession. It is a good average oat.

A MEMBER: What is your average yield for the O.A.C. No. 72 variety?

DR. ZAVITZ: In our experiments at Guelph in the average of the past twelve years it has given a yield of 88.1 bushels per acre.

A MEMBER: How does the Elmhurst variety of oats stand up in yield?

DR. ZAVITZ: We are not able to secure the Elmhurst for testing in our plots until last year. It gave a very good yield per acre, but proved to be one of the thickest hulled varieties and one of the coarsest strawed oats tested in 1919. The Elmhurst, exhibited by the introducer of this variety at the Provincial Winter Fair in December last, had over 38 per cent. of hull which was greater than that of any other variety entered in competition.

A MEMBER: What are your results with the Alaska?

DR. ZAVITZ: It is a good early oat and a fairly close rival of the O.A.C. No. 3, being practically equal in yield to the Daubeney.

A MEMBER: Will oats cross-fertilize?

DR. ZAVITZ: Varieties of oats will not cross-fertilize except in very exceptional cases.

A MEMBER: What about the feeding value of barley?

DR. ZAVITZ: Barley produces more digestible food constituents per acre than any of the other small grains grown in Ontario.

A MEMBER: How do emmer and barley compare in feeding value?

DR. ZAVITZ: In experiments conducted in the United States they have given results practically equal. We have not tested the comparative values of these grains for feeding purposes at the College.

A MEMBER: Does the mixture of barley and oats produce more than when these grains are grown separately?

DR. ZAVITZ: When oats and barley of the right varieties are grown in the proper proportions, we have obtained fully two hundred pounds of grain per acre per annum more than from either grain grown by itself. It is important to use two varieties that will ripen at the same time and for this purpose the O.A.C. No. 3 oats and the O.A.C. No. 21 barley work admirably. After testing twenty-five different combinations for at least five years, we have learned that the highest returns have been secured from one bushel of oats and one bushel of barley, by weight, per acre, thus making a combination of eighty-two pounds of the mixture per acre. The co-operative results throughout Ontario in growing different mixtures have also corroborated the results at Guelph. It is interesting to note that in 1919, there were over 628,000 acres of mixed grains grown in Ontario. According to the statistical report for Ontario for 1918, the market value of the mixed grains was over $45 per acre, while that of barley was about $38 and of oats $34 per acre.

A MEMBER: What about using the same mixture year after year?

DR. ZAVITZ: If you continue to use seed produced from a mixture you soon have a wrong proportion of the two kinds of grain and, consequently, the results would not be as satisfactory as from a newly prepared mixture of definite proportions. When grown in combination, barley increases more rapidly than oats.

A MEMBER: Which corn is the best for silage?

DR. ZAVITZ: No one variety is best under all conditions. In our co-operative experiments for the last four years, of the seven varieties under test, the Wisconsin No. 7, has given the largest total yield per acre and the Golden Glow the largest yield of grain, in fact, the Golden Glow came first in three out of the four years.

A MEMBER: Is the Golden Glow earlier than the Wisconsin No. 7?

DR. ZAVITZ: Yes, slightly earlier.

A MEMBER: What are your results with sugar beets for feeding purposes?

DR. ZAVITZ: I suppose you have reference to the sugar mangels. These are intermediate in both yield and quality, as compared with the sugar beets for sugar production, and the mangels for feeding purposes. In sugar content, on the average, mangels contain five to six per cent., sugar mangels eight to ten per cent. and sugar beets fifteen to sixteen per cent. In the co-operative experiments in 1919, the highest yielding variety of sugar mangels gave 26.3 tons and of mangels 33.6 tons per acre.

A MEMBER: Which is giving the best results, mangels put in on the level or in ridges?

DR. ZAVITZ: In the results of our experiments conducted at the College, where the soil might be termed an average clay loam, we have obtained about two-thirds of a ton per acre more, on the average, from level cultivation than from ridges. On a heavy clay I think better results would be obtained from the ridges, and on light soils from the level cultivation. The soil moisture is better conserved when level cultivation is practised.

A MEMBER: Which will make the best feed for cattle?

DR. ZAVITZ: Turnips for beef cattle, and mangels for dairy cattle. Under normal conditions in Ontario the growth of mangels has been increasing and that of turnips decreasing. This, I believe, to be largely due to the development of the dairy industry.

A MEMBER: Is it better to manure winter wheat in the autumn or in the spring?

DR. ZAVITZ: The results of our co-operative experiments have been slightly in favor of spring as against fall application of fertilizers. In the case of farm-yard manure, however, we have obtained comparatively better results from the fall than from the spring application. The manure applied in the fall has increased the wheat crop a little over seven bushels per acre, and from the spring application almost six bushels per acre. It should be remembered that the fall application was worked through the soil and that used in the spring was a top dressing.

A MEMBER: Does it pay to put a dressing of farm yard manure on alfalfa the first year?

DR. ZAVITZ: It would probably pay to use the manure as a top dressing in this way, but I would prefer having the land in a good clean, fertile condition before the alfalfa was sown. There would be danger of getting weeds in the land, while the alfalfa plants were still small by top dressing with manure the first year.

A MEMBER: Is it absolutely essential to inoculate alfalfa seed?

DR. ZAVITZ: It is not absolutely essential, but it is generally advisable unless alfalfa has been grown successfully on the land just previously. The inoculation of alfalfa seed is easily performed and is comparatively cheap.

CO-OPERATIVE EXPERIMENTS IN WEED ERADICATION.

PROF. J. E. HOWITT, O. A. COLLEGE, GUELPH.

During the past eight years (1911-1919), the Ontario Agricultural and Experimental Union carried on co-operative experiments in the eradication of weeds. Over seventy farmers carried on satisfactory experiments. The weeds experimented with were Perennial Sow Thistle, Twitch Grass, Bladder Campion or

Cow Bell, Wild Mustard, Ox-eye Daisy, Field Bindweed, Wild Oats and Chess. The following is a brief summary of the results obtained from these experiments:

EXPERIMENT NO. 1.

The Use of Rape in the Destruction of Perennial Sow Thistle.

Number of experimenters	12
Reporting complete success	9
Reporting partial success	2
Reporting failure	1

EXPERIMENT NO. 3.

The Use of Rape in the Destruction of Twitch Grass.

Number of experimenters	14
Reporting complete success	11
Reporting partial success	3

EXPERIMENT NO. 4.

Method of Cultivation for the Destruction of Twitch Grass.

Number of experimenters	9
Reporting complete success	3
Reporting partial success	5
Reporting failure	1

EXPERIMENT NO. 5.

Method for the Eradication of Bladder Campion or Cow Bell.

Number of experimenters	9
Reporting complete success	5
Reporting partial success	4

EXPERIMENT NO. 6.

Spraying with Iron Sulphate to Destroy Mustard in Cereal Crops.

Number of experimenters	23
Reporting complete success	20
Reporting partial success	2
Reporting failure	1

EXPERIMENT NO. 7.

A Method of Cultivation for the Destruction of Ox-Eye Daisy.

Number of experimenters	3
Reporting complete success	2
Reporting partial success	1

EXPERIMENT NO. 8.

A Method of Cultivation and Cropping for the Suppression of Field Bindweed.

Number of experimenters	3
Reporting complete success	1
Reporting partial success	1
Report not complete	1

EXPERIMENT NO. 9.

A Method of Two Hoed Crops for the Eradication of Wild Oats.

Number of experimenters	2

No complete reports as yet.

EXPERIMENT No. 10.

A Method of Cultivation for the Destruction of Chess.

1 Experimenter in 1918 who reported the experiment a complete success.

NOTE.—Experiments 7, 8, 9 and 10 have only been conducted for two years.

Some of the practical information gained from these co-operative weed experiments is:—

First. That good cultivation followed by rape sown in drills provides a means of eradicating both Perennial Sow Thistle and Twitch Grass.

Second. That rape is a more satisfactory crop to use in the destruction of Twitch Grass than buckwheat.

Third. That rape gives much better results in the eradication of Twitch Grass and Perennial Sow Thistle when sown in drills and cultivated than it does when sown broadcast.

Fourth. That thorough deep cultivation in fall and spring, followed by a well cared for hoed crop, will destroy Bladder Campion.

Fifth. That Mustard may be prevented from seeding in oats, wheat and barley by spraying with a twenty per cent. solution of iron sulphate, without any serious injury to the standing crop or to the fresh seedings of clover.

T. G. RAYNOR, OTTAWA: If you want to get the best out of a man, you want to oppose him; when you get him up to discuss a problem give him some opposition, then you stir him up and he begins to think faster to meet your arguments. We have observed the same thing in some parts of the Province where bad weeds have got a start. Farmers had to get down to business and fight for their farms and for their crops, and in doing that, they have learned the scientific principles that increase plant food, and incidentally have been able to control these weeds. They have grown more profitable crops than before, therefore, weeds are not an unmixed evil. There are many men who own land in different parts of the country, who are not improving it; they are holding it for speculation. Very frequently the best land becomes a hotbed for the promulgation of different kinds of weeds. These get over on the neighbor's farm. I do not know how we can control that; though we have attempted it through various laws in different Provinces. In these later years when everybody has been engaged in the cultivation of soil and trying to produce up to the limit, we have not had time to go into this matter. But fortunately an agent has come in to help us keep the weeds down, and that is the increased price of wool which has brought about an increased number of sheep on the farms of the Province, and they are contributing very largely to the suppression and control of weeds.

I have noticed in connection with the discussion of any agricultural topic, it is not very long before somebody in the audience gets up and wants to know how to get rid of some kind of weed. We had an illustration of this at the Winter Fair Seed Meeting at Ottawa. One man who came from the St. Lawrence Valley said that tares were growing along the river banks and in the fields there, and wanted to know how to get rid of them. We find that people's minds are open, and the results of the experiments that Prof. Howitt has inaugurated is keeping propaganda before the people, and the *Agricultural Press* in sending these abroad and in publishing the evidence of farmers as to their methods of controlling weeds in different parts of the country, have done a great deal of good, and yet there is a great deal more of effectual work to be done. There is no weed, in my opinion, that is so noxious that it cannot be controlled if it is taken in the right way.

Prof. Howitt has outlined methods for control of three or four of the worst weeds we have in the Province, and he has told us that experimenters who carried out their work properly have succeeded. So far as difficulty in dislodging is concerned, I believe the wild morning glory is about the hardest to eradicate. A gentleman told me the other day, he got rid of it by growing alfalfa, and that he had not seen it in his fields since commencing to grow this crop. Some of us might be a little skeptical as to the effectiveness of alfalfa in destroying wild morning glory, but we must remember we should know all the details before passing judgment.

One thing I want to impress upon every young man in connection with fighting weeds on the farm and that is to commence the fight when these plants are young. We cannot always do this, but we can deal with many of our worst fields by using crops or methods of cultivation that have a scattering principle, and which carry on the cultivation right through the summer and into the fall, so that the plant food is exhausted and the weeds cannot survive.

Some years ago I was alarmed at the spread of the sow thistle over this country. Now we learn it is only on wet marshy soils that it grows and thrives. If these can be properly drained and the soil kept in right condition, we can control this weed.

There is a great deal in knowing the weed you are after; study its life history, its method of growth and development. This will go a long way in giving us a clue as to what kind of implements to use and what farm crop should follow up our cultivation in order to exterminate the weed. I have the conviction that anyone who goes about it in the right way, with persistence, will conquer.

THE RELATION OF THE BARBERRY SHRUB TO STEM RUST.

PROF. J. E. HOWITT, O. A. COLLEGE, GUELPH.

There is another matter which I desire to bring to your attention at this time. It is the question of the Barberry Shrub in Ontario. Plant pathologists are unanimous in the assertion that the presence of the barberry in grain growing regions, does materially increase the amount and severity of stem rust. In many of the Western states and in the Western Provinces, a campaign for the eradication of the barberry has been started. In England and in Denmark, such a campaign was carried out a few years ago and so far the results have been very beneficial. What are we in Ontario going to do about it? It seems to me that our wisest policy is to watch the results in the West and the further results in the countries where the eradication of the barberry has been carried out; but, in the meantime, I think we should take some action to prevent the further distribution of the barberry in Ontario.

As you know, there is now a law upon the Statutes of Ontario making it an offence to grow and cultivate the shrub known as the barberry. This law is a dead letter and nurserymen in Ontario to-day are selling the barberry freely and openly. If you take up almost any nurseryman's catalogue, you will find the common barberry and the purple leaved variety offered for sale. In my opinion, something should be done to enforce the Barberry Act so as to prevent a further distribution of this pest throughout the Province.

DR. STONE: In regard to the Barberry plant, you are possibly acquainted with the fact that last year the United States lost several million bushels of grain on account of rust, because the barberry campaign had not gone far enough. As far as we are concerned in this Province, I think we had better follow Prof. Howitt's advice and see how they succeed with the eradication of barberry in the Western States, Manitoba and other Western Provinces, but in the meantime, in order to make our problem as simple as possible, I think we should take some steps to prevent a further dissemination of the barberry. In order to bring this to a head, I have prepared the following resolution:

"*To the Honourable the Minister of Agriculture:*

"Whereas plant-pathologists agree that the common barberry (*Berberis vulgaris L.*) and its purple-leaved variety (*Berberis vulgaris L. var. atropurpurea Rgl.*) increase the amount and severity of stem rust, and

"Whereas a campaign for the eradication of the barberry in the Western States and Provinces has been carried on, and

"Whereas it may become advisable, in the near future, to carry on a campaign in Ontario for the eradication of the barberry, and

"Whereas many nurserymen in Ontario, at the present time, are offering for sale the common barberry and its purple-leaved variety, and

"Whereas importations of barberry from the United States may continue to take place:

"Be it resolved, that we, the members of the Ontario Agricultural and Experimental Union, request that the clause of the 'Act Respecting the Barberry Shrub' dealing with the sale and distribution of the barberry by nurserymen and others be enforced.

"And that clause two (2) of said 'Act Respecting the Barberry Shrub' be amended to read as follows:

"In this Act 'barberry' shall mean the species *Berberis vulgaris L.* and *Berberis vulgaris L. var. atropurpurea Rgl.* or *Berberis atropurpurea Hort.*

"And the enforcement of the Act be placed under the jurisdiction of the Provincial Entomologist as coming naturally under the Fruit Pest Act, and that he be authorized, through his inspectors, to destroy the above species and varieties of barberry in the nurseries.

"And that the Provincial Department of Agriculture request the Dominion Department of Agriculture to take the necessary steps to prevent the importation of the said species and varieties of the barberry."

MR. RAYNOR: I take much pleasure in seconding that motion.

DR. STONE: It would be a very simple matter for our inspectors to look through the various nurseries and see whether there is any of these two barberries, (of course the Japanese barberry is exempt) and to point out to the nurserymen that that stock must be destroyed.

THE CHAIRMAN: This is a matter that has come before our Legislators in Toronto on different occasions; a special committee of the House dealt with this question, and experts on the subject convinced the committee, that barberry was undoubtedly the host of rust. The law as it stands at the present time should be put into active operation, and I am glad that the clause relating to the inspectors destroying the stocks has been included. I think it adds to the effectiveness of the resolution.

PROF. CAESAR: We have no means of checking up whether a man sends out barberry or not, and there are no means of control that I know of excepting by the inspectors. I think the Barberry Act should be enforced.

A committee composed of PROF. HOWITT, DR. STONE, MR. RAYNOR, PROF. CAESAR and MR. REVELL was appointed to look into the details of the resolution. The resolution was brought in by them as above recorded, and carried.

FORESTRY PROBLEM IN ONTARIO.

E. J. ZAVITZ, PROVINCIAL FORESTER, TORONTO.

In speaking of Ontario's forestry problem before a gathering, chiefly concerned in food crops, I must necessarily be brief. This is not a new subject for this gathering, because at some of your earliest meetings policies were advocated in regard to reforestation which have begun to bear fruit.

We have made a small beginning in tree planting, but the great Province of Ontario has scarcely awakened to the real needs of a progressive forest policy. Ontario is still in the primitive stages of exploitation and is only beginning to feel the pinch of high wood prices and lack of supply. We have not yet begun to consider our forests as producing continuous wood crops.

I present this problem to you because it is your problem. You are joint owners in at least fifty million acres of forest lands which can never come under the plow and can only be kept productive by the growing of forest crops.

The Laurentian plateau extending from the Ottawa River to the Manitoba boundary, comprises a potential forest area of fifty million acres, an area larger than that of England and Wales. This vast region of Archean rock formation has here and there pockets of soil which may be suited for agriculture, but in the aggregate this area must be managed for forest crops if it is to remain permanently productive.

As joint owners in this property you are interested in seeing it managed so that it will yield a perpetual revenue to protect you from the burdens of direct taxation. At present our gross revenue is about one and a half million dollars from this property. I need only point to the forest revenues of some other countries to indicate the possibilities of future revenues to be expected from our permanent forest regions. Previous to the war, France had 2,700,000 acres of state forests, producing an annual net revenue of about four and a half million dollars or about $1.75 per acre. Saxony with 430,000 acres of state forests realized an annual net revenue of $5.30 per acre. Throughout Western Europe this story can be repeated of state and municipal forests producing splendid returns.

Many of our experienced lumbermen serving in France were amazed at the wonderful condition and productiveness of the French forests. That the timber from the forests of France helped save the situation in the late struggle, is now a record of history.

Do you know the story of these French forests or that of the forests of a large part of Central and Western Europe? At the end of the 18th century, conditions were similar to those to be found in many parts of Ontario to-day. Great regions of sand wastes—overcut and burned forest areas—this was the story in Central Europe at the time of the French Revolution. You have heard of the reclamation of the sand wastes in France. One area of two million acres known as the Landes, has been reforested during the last century and is to-day covered with a forest valued at one hundred million dollars. Not only have they been reforesting waste areas but the mutilated forests of Western Europe during the past century have been brought up to a high state of productiveness.

At present we have great sand areas in Ontario denuded of forest growth and lying waste. In the non-agricultural regions of the Laurentian plateau we are still cutting and burning with little thought of the future. In many parts of this region where definite investigations have been made, we find that unregulated cutting and burning have left a state of affairs which will cost a large amount of time and money to restore, even to normal forest conditions. Many of you are familiar with these waste areas with their misdirected and unfortunate efforts at agricultural settlement. While a large portion of our permanent forest region is yet undisturbed, virgin condition, should we not begin to think of managing this property with some thought for the future?

While you have a personal interest as citizens in the administration of the vast forest areas of the north, I will now refer more particularly to the forestry problems of older Ontario.

Southern Ontario has some three million acres of private woodlands and over three million acres of waste areas which can only be made productive by reforestation. This older portion of the Province has about nine per cent. of indifferent woodland, with many townships having less than five per cent. of woodland. While only of relative importance it should be pointed out that none of the important countries of Europe are so low in percentage of woodlands. Italy has fifteen per cent., France had about eighteen per cent. and Western Europe may be said to have from fifteen to twenty per cent. of forest area. So far as the chief forest products such as building materials, railway ties and pulpwood supplies are concerned, Southern Ontario is absolutely dependent upon outside sources. The woodworking industries of Southern Ontario are largely dependent upon supplies of the more valuable hardwoods from the United States. We are fortunate in still having supplies of soft woods in Northern Ontario. These supplies are becoming increasingly inaccessible and costly, so that it is a common sight to see southern pine and British Columbia lumber successfully competing with our native pine for building purposes and construction. We are informed by the Forest Service of the United States that the virgin supply of southern pine can only last about fifteen years, and it is certain that the United States will soon cease to export valuable hardwood in any quantity.

The wood working industries of Ontario use approximately twenty million dollars' worth of raw materials. It is urgent that we make sure of the future supply of wood for these industries.

The census of 1911 gives the value of firewood and fence posts used in Ontario at $5,700,000. A large proportion of this material comes from the three million acres of private owned woodlands in older Ontario. While many of you are fortunate in being able to secure anthracite coal, yet a large portion of our rural population depend almost entirely on wood for fuel. The frequent repetition of coal shortages should make us seriously consider the necessity of developing a policy of producing wood crops upon every foot of non-agricultural soil in this older part of the Province.

What, then, is the forestry problem for southern Ontario? Protection and improvement of the remaining woodlands; the replanting of waste areas held by private interests, and the reforestation of the larger areas of public lands existing in older Ontario.

The improvement of forest conditions on lands held by private owners is a most difficult problem. Private forestry on small holdings has proven unsatisfactory even in the older countries of Europe because of the long time element in producing a crop. Artificial stimulus by remitting taxes has been tried in many countries and has failed. We have in Ontario a statute giving municipalities power to remit taxes on woodlands, but no evident result has been accomplished.

In democratic countries mandatory measures must fail. The most we can hope to do with private woodland owners is to educate by bulletins or other propaganda, and to supply state aid in securing forest planting material at a low cost.

The most important measure towards solving the problem is by establishing demonstration forests on the larger waste areas in the older parts of the Province. The successful planting and developing of forests upon these areas will have a very great influence and educational effect upon the private woodland owners of any given region. This policy is virtually what this Union recommended several years ago. This policy was entered upon by the Government when a demonstration forest station was started in Norfolk County. This station consists of 1,800 acres of non-agricultural land, and should eventually comprise about 2,500 to 3,000 acres. At this station is established a forest nursery for producing planting material and forest plantations of various kinds are being developed. The results of this work are very encouraging, and worn out sand lands planted in 1909 are to-day covered with young forests of pine averaging 15 to 20 feet in height. Private owners of similar soils in this region are being influenced by this example, so that we have in this district some very fine private plantations. During the past 15 years we have been supplying free planting material to prospective planters, and we have throughout the Province a large number of demonstration plantations.

The war interfered seriously with this work, and our chief difficulty at present is to secure nursery stock to fill the demands. You will realize that it takes two to three years to produce nursery material suitable for shipping and planting.

Our work up to the present has been on such a small scale that it has not seriously influenced the problem. It must not be overlooked, however, that it has pointed out the way. We should extend this work by the creation of similar stations to that in Norfolk, and undertake the problem of reforesting in older Ontario on a much larger scale, if we are to secure any real benefits from such a policy.

A. H. Tomlinson: After hearing Mr. Zavitz's address it occurs to me that the time is ripe for this Province to adopt a most rigid policy in regard to reforestation.

I would like to see something done at this meeting to support Mr. Zavitz and the Forestry Association of Ontario and other interested bodies in bringing about legislation so that the Government may know and realize that popular opinion is at their back and is anxious to see something done to put forestry on the basis it should occupy.

Knowing the St. Williams district fairly well, I was much surprised, after an absence of six or seven years, to visit the farm recently and find not only a good forest growth, but much improvement in soil fertility where trees had been grown.

Mr. Zavitz' scheme for the reforestation of that section of the country means that in years to come we are going to have in this Province a very large amount of timber which will be most valuable and also a large amount of land which will also be most valuable for agricultural purposes—land which to-day is absolutely useless except for reforestation purposes.

Prof. Caesar: I know a great many people in Muskoka who have five, ten, or fifteen acres of their own; they have their own fire brigade because it is to their own interest to protect their forests. Many of these lands have been burnt over, but they are growing up again, though not with pine. I would like to ask Mr. Zavitz if these people are given any encouragement by the Government to replant these areas. Would there be any Scotch Pine or Red Pine furnished for these conditions?

Mr. Zavitz: Who owns the pine upon settlers' lands in the north is a rather difficult question to answer. A man taking up a homestead or farm, if it is situated in that part of the country where a lumberman can purchase a license on the pine, does not get the pine; the lumberman gets it. I am not certain how long that condition lasts or whether these lands Prof. Ceasar speaks of are under lumbermen's licenses or not, but I do not think the young pine planted in future will be considered as belonging to the lumbermen under their present contract.

Prof. Caesar: Will they belong to the Government?

Mr. Zavitz: When the Government gives a patent to a man, the patentee will have the ownership, but there are certain points about that which are complicated.

Prof. Caesar: The point I want to bring out is this: A number of men would like to plant these trees out, even though they do not own them. They want to see their places made beautiful, because there is nothing more beautiful than a splendid stand of young pine. Is there any means of furnishing people with young pine when they wish to plant them?

Mr. Zavitz: The policy of the Government is to furnish planting material to all planters. We receive many applications. In fact, we have applications from the locality of Matheson in the clay belt country. Our greatest problem is to supply the planting material, but we expect, in the season of 1921, to have 600,000 or 700,000 pine ready for distribution, and they would go into any part of the country where plantations are to be made or where people are prepared to make them. We have had no seed crops in Canada during the last three years of red pine, which is one of our important trees, and the seed crop in Europe of Scotch pine failed last year. Previous to that it was difficult to get seed owing to war conditions. Our difficulty is to get seed. No big scheme of reforestation can be carried on without first securing seed. This will take three or four years.

Mr. Revell: In order to bring some weight on this matter from a recognized organization, I would suggest that a committee composed of Prof. Caesar, Mr. E. J. Zavitz, Mr. J. B. Spencer, and Mr. Tomlinson get together to draft a resolution to the proper authorities on this question, and present it to this meeting before the last session this afternoon.

The Chairman: I hope to see many of the barren lands of Ontario reclothed with forests. Along the Grand Trunk Railway from Guelph to Toronto there are many waste spots that might be reforested, and it would add greatly to the future revenues of this Province. Having had some service in a public way, I can recognize what the virgin forests of Ontario represent in removing the burden of taxation from the shoulders of the taxpayer. With the history of Europe and the records of forestation there before us, we might well take steps to ward off the evil day when timberland will be a rare thing in Ontario. I feel we are taking steps to stop to some extent at least the wholesale destruction of our woodlands.

What is the feeling of this meeting as to the advisability of having this resolution drafted for our endorsation later on?

The following resolution was then read to the meeting by Mr. A. H. Tomlinson, seconded by Mr. J. B. Spencer, and carried:—

"*To the Honourable, the Minister of Agriculture*:

"Whereas the forests of Ontario are rapidly disappearing, and whereas steps hitherto taken to replace them have been very inadequate, and whereas the demand for lumber for various purposes will remain great, and whereas a continuous supply of lumber is a great asset to the Province in many ways,

"Therefore be it resolved that this Experimental Union petition the Ontario Legislature to undertake an energetic, far-sighted forestry policy that will not only safeguard our present forests from unwise depletion, but will also restore forests to the waste lands of Old Ontario and to the deforested portions of New Ontario."

EXPERIMENTAL WORK IN APICULTURE.

PROF. F. E. MILLEN, O.A. COLLEGE, GUELPH.

The experimental work in apiculture was commenced in 1910 by Mr. Morley Pettit with twenty-five beekeepers co-operating. In 1916 the last report shows that almost five hundred beekeepers were co-operating. Mr. Pettit resigned in 1917 to enter the commercial beekeeping field. Owing to the changes in the department the experimental work in apiculture has been discontinued with one exception. During the winter of 1918 and 1919 an experiment was conducted to prove the value of raw sugar as a winter feed for bees. One hundred and eleven beekeepers reported the results. Owing to the fact that the winter of 1918-19 was an exceptionally mild one the results were not marked. From some reports, however, it was seen that had that winter been severe, serious injury would have resulted from the use of raw sugar as a winter feed. With a climate such as we have in Ontario, bees go into winter quarters, if wintered in the cellar some time in November, and do not have a flight until removed from the cellar some time during late March or early April. During the time the bees are in the winter quarters, they do not hibernate, but are constantly consuming small quantities of feed. If the food is of good quality and does not contain impurities and other indigestible matters, practically all of the food is digested and used to promote heat through the muscular activity of the bee. Under such circumstances the indigestible matter is retained in the intestine until the bees get a chance to fly in the spring. When the food contains much impurity or indigestible matter, the intestines become overloaded, the bees become uneasy, and a bad condition ensues known to beekeepers as dysentery. Dysentery will often cause unseasonable brood rearing to commence, and the bees use their vitality at an alarming rate, and usually the colony dies or is so weakened that it is useless as a honey gatherer the next season. For these reasons beekeepers are careful to feed only pure granulated sugar or honey from a source which does not contain much indigestible matter. The feeding of raw sugar is unsafe in the average Ontario winter.

The experiments which have been conducted in the past have had to do largely with those phases of management in the apiary which were giving the average beekeeper most serious concern. Beekeeping is somewhat different to some of the other branches of agriculture in that there is an inactive season of about six months, during which time the bees are not manipulated in any way. Of the other six months the management must be so conducted that the colony is in the best condition to gather the surplus crop of honey, which is often harvested in one month. Colonies not properly managed will often arrive at the honey gathering strength after the honey flow is past, when the increased numbers of bees in the colony become a loss rather than an asset to the beekeeper.

One striking example of the value of the co-operative experiments conducted has been shown in seasons when the crop of honey has been light. Those carrying out experiments have shown a much higher average than the average shown by other beekeepers in the Province as seen by the honey crop report issued by the Ontario Beekeepers' Association.

THE REPORT OF THE COMMITTEE OF AGRICULTURAL CHEMISTRY.

PROF. R. HARCOURT, O. A. COLLEGE, GUELPH.

Fertilizer experiments planned to bring out the effect of phosphoric acid were placed in Kent County in the spring of 1918. Four experiments with corn as the crop, and four with sugar beets as the crop, were laid down. The very wet weather of the early spring made it difficult to get the work of applying the fertilizer done until later than was desired. The weather following was excessively dry, affording little chance for the plant food applied to be taken up by the plant. Naturally the results were undecisive, and we are not prepared to quote any of them at the present time.

THE REPORT OF THE COMMITTEE ON FARM LITERATURE.

DEBATES AND PLAYS IN RURAL COMMUNITIES.

DR. O. J. STEVENSON, O. A. COLLEGE, GUELPH.

There are in Ontario nearly 1,400 rural organizations which engage in literary and social activities with a view to self-improvement. Two of the most attractive forms of work which these organizations engage in are the holding of debates and the presentation of plays.

During the past year I have undertaken an inquiry in order to find out if possible in what way the Experimental Union and the Ontario Agricultural College can best serve the needs of rural communities with respect to both debates and plays. During the fall a questionnaire was sent out to all Women's Institutes, Farmers' Clubs, and Junior Farmers' Improvement Associations for the purpose of ascertaining the kind of work that is being done in the case of debates and plays, and the difficulties that have been met with in each case.

DEBATES.

In the carrying on of debates the greatest difficulty mentioned in the majority of replies is that of persuading members to take part. Lack of confidence, shyness, backwardness, stage-fright have to be overcome before successful debates can be carried on. "Our greatest difficulty," writes one member, "is to get our members interested enough in the subject to take hold of it. They feel that they are not equal to the task, and are dubious about their ability to face the audience from the platform. Once they get interested, however, there is no trouble, and their main thought is to 'trim' their opponents."

The second great difficulty appears to be the lack of suitable subjects for debate, and inability to procure assistance in preparing the debate. Many of the subjects debated on are very hackneyed, and not likely to arouse much enthusiasm, for example:

The pen is mightier than the sword.
Country life is preferable to city life.
Cards are a greater evil than tobacco.
Reading is a greater source of information than travel.
Married life is preferable to single life.

Many of the subjects also are trivial or foolish, and not worth serious discussion, for example:

A fine house is a greater sign of prosperity than a fine barn.
A city girl is more helpless in the country than a country girl in the city.
Women should have the privilege of proposing rather than the men.
A man will do more for money than for love.
Men are more extravagant than women.
A good-natured, slovenly wife is preferable to a clean, tidy crank.

This latter question must be a burning issue in the country, for, judging from my replies, it has been debated at almost every cross-road in the Province.

It is, no doubt, better for members of a rural organization to debate on hackneyed or trivial subjects than not to debate at all. The practice of speaking in public on any subject is in itself valuable. But in a rural community a debate is usually a matter for general discussion, and it is better for all concerned that the subject should in itself be worth while, or that it should not at least be empty and foolish.

As a result of this inquiry the Department of English at the Ontario Agricultural College has issued a leaflet containing a number of subjects for debate, which should be more suitable than many of those that are commonly debated; and further leaflets will be issued from time to time.

PLAYS.

Judging from the replies received, a great interest is taken throughout the rural communities of the Province in the production of plays. In many communities, however, it is impossible to carry on dramatic work of any kind because there is no suitable hall available for the presentation of a play. In a number of communities an effort has been made to secure the use of the church for this purpose, but some of the church officials have raised objections. There should in every rural community be some building available for the presentation of wholesome rural plays, and it is to be hoped that the difficulty will be met by the erection of Community Halls where no suitable hall already exists. As a result of this questionnaire I have received some forty requests for information regarding community halls.

But even where suitable halls are available, conditions in rural communities are in most cases not so favorable for the presentation of plays as in towns and cities. There are fewer young people to choose from, and owing to the condition of country roads in winter, it is difficult to get actors together for rehearsals. "Our chief difficulty," writes one member, "is to get together for practice and to keep the characters from getting 'contrary' with each other." "All is vanity and vexation of spirit," writes another lady, who has evidently had her patience sorely tried with the vexed problem of rehearsals.

There is no difficulty in getting lists of plays to choose from; there are thousands of plays in the publishers' catalogues. But in spite of this it is very difficult to find plays that are suitable for rural communities. During the last two or three years, nearly three hundred different plays have been put on by rural organizations in Ontario, but the majority of these are utter trash. Some are merely vulgar, some are melodramatic, and some are of the dime novel style. The majority of them depend for their interest upon impossible situations, bewildering absurdities and artificial entanglements. There are very few of them that contain a clean wholesome plot, or that leave with the audience any picture or any message that is worth remembering. The very titles in some cases are sufficient indication of the character of the play. Here are a few of them:

Tony, the Convict.
The Outcast's Daughter.
The Cheerful Liar.
Harry Henpeck's Chicken Trial.
Freezing His Mother-in-law.

It is quite evident from the replies received that there are a good number of people in the rural communities who would gladly put on a better type of play if they only knew where to secure them. As a matter of fact there are few plays in existence that are suitable for amateur production in rural communities. During the past year I have read upwards of two hundred plays submitted to me by publishers, and in that number I have not found half a dozen that are really suitable. To the publishers—even to the best of them—a rural play is one in which the farmer is a "hayseed" or a "rube." "We must confess," wrote one of the leading publishers, "that the idea of a play which would make a serious appeal to a rural audience is a new one to us."

In the course of my inquiry I sent letters to all the Agricultural Colleges in the United States, asking what they had done towards providing plays or pageants suitable for rural communities. From all but three of the colleges I received replies. Two or three colleges appear to have partly solved the problem by the adoption of the "Little Theatre" idea. The "Little Theatre" aims to get away from the production of elaborate dramas with expensive staging and costumes, and to put on shorter and simpler plays with little chango of scene and only a few characters. But, as a matter of fact, the short play, though simple in structure, is often more difficult and requires more finished acting than the longer play. And, besides, most of the plays that are adapted for the "Little Theatre" are of the conventional city type and are not wholly suitable for the country.

Most of the colleges are keenly alive to the problem, and in two or three cases they are attempting to solve it by producing rural plays of their own. One or two of these plays with rural themes have been very successful, and have been acted in different States. The majority of the colleges, however, have as yet done nothing, but are anxious to receive information.

What can the Experimental Union and the Ontario Agricultural College do to improve the situation in Ontario? I am preparing a leaflet containing a short list of plays, and suggestions for amateurs. I am hoping that prizes may be offered for suitable rural plays. We need a central Extension Bureau to offer advice, to supply "make-ups," and even to provide scenery. There is no reason why the same play should not be given, and the same "make-ups," stage properties and scenery used in different counties in Ontario in the same season.

The rural problem is not wholly one of better hogs, better poultry, better grain, or better methods of farming, however important these may be. The rural survey which I have undertaken convinces me that the rural communities are just as anxious for social betterment as they are for new formulae for insect pests or new methods of marketing their fat cattle. "Is not the life more than meat and the body than raiment?" Judging from the inquiries that come to the English department every day, the people in the rural districts have been suddenly seized with the desire to be "improved." It is the privilege of the Experimental Union and the Agricultural College to supply at least some of the means for improvement.

We are putting on, this evening, a rural play called "The Brown Mouse." The play is a dramatization of Herbert Quick's novel, and is a plea for better rural schools. It has been chosen with the idea of showing that a rural play need not be either coarse or melodramatic in order to attract a rural audience. "The Brown Mouse" is serious in tone, but contains much wholesome humor. It deals with a pressing rural problem, and will, I believe, prove to be instructive as well as entertaining to an audience of rural leaders such as are gathered here tonight.

Note.—At the evening session the play was put on before a packed house, consisting of students of the O.A.C., students of the short courses, and members of the Experimental Union. It proved to be a complete success and was one of the best plays ever presented at the college.

The play was the work of Mrs. O. J. Stevenson, who dramatized Mr. Quick's novel. The cast of characters was as follows:

Jennie Woodruff, Colonel Woodruff's Daughter		Miss Jacquetta Gardiner
Jim Irwin, The Brown Mouse		F. W. Stock
Colonel Woodruff, a Prosperous Farmer		J. P. S. Nethercott, B.A.
Ezra Bronson	Trustees of the Woodruff School District	C. A. Cline
Cornelius Bonner		A. P. Clark
Haakon Peterson		H. R. Wyatt
Pete, the Colonel's Hired Man		A. M. Porter
Newt. Bronson	Two School Boys	Mark Morton
Raymond Simms		Harold Whiteside
Mrs. Ezra Bronson		Miss Frances E. Heming
Mrs. Cornelius Bonner		Miss Vera Douglas
Mrs. Haakon Peterson		Miss Agnes Sharp
The School Inspector		R. C. Frith
Professor Withers		W. H. Grant
Fanny Bronson		Miss Wanda Wilson
The Doctor		R. C. Frith
Mrs. Woodruff		Miss Olive Gardiner
Mr. Simms		A. M. Porter

The management of the play was in charge of W. H. Wright, B.S.A.

The properties were arranged by a committee consisting of A. H. Tomlinson, J. E. Ramsdale, M. H. Howitt, and B. F. Tinney.

Music was supplied by the College Orchestra.

FARM MANAGEMENT SURVEY WORK.

PROF. A. LEITCH, O. A. COLLEGE, GUELPH.

At the convention of the Experimental Union, two years ago, the first publicity was given to figures of farm business, obtained by the survey method. Those figures were from a survey made in Caledon Township, in the County of Peel, in the fall of 1917. That was a small survey, comprising only 113 farms, so the actual information gained was not great. But it was of great importance in that it gave us a wealth of experience, an experience which enabled us to go into other areas and make similar, but larger surveys.

Farm management survey work has been extended until, in the spring of 1919, we took records from approximately fourteen hundred farms, representing four distinct areas and three distinct types of farming in the Province of Ontario. Those areas were—a dairying section in Oxford County, a beef raising section in the northern part of Middlesex County, a mixed farming section surrounding the Town of Orangeville and comprising parts of Dufferin, Wellington and Peel Counties, and a dairying section of Dundas County in Eastern Ontario.

The figures, which I shall present to you, will show a comparison in certain respects, of the three types of farming so far studied—mixed farming, dairying and beef raising. Table 1, shows comparative figures for Oxford and Peel Counties, for the crop year of 1917. Although the Peel County survey was made in the fall of 1917, and the Oxford County survey in the spring of 1918, the figures in each case were for the crop season of 1917.

TABLE 1.—OXFORD AND PEEL COUNTIES.—1917.

Tillable Acres		21 to 45	46 to 60	61 to 75	76 to 90	91 to 110	111 to 135	136 to 160	161 to 185	Over 185
Tillable Acres	Oxford	39	52	69	84	98	124	142	171	212
	Peel	....	....	72	....	93	130	....	175	....
Capital ...	Oxford	$7,709	$9,119	$12,057	$13,630	$15,104	$18,557	$19,472	$25,089	$30,108
	Peel	....	....	$6,944	....	$8,942	$12,635	....	$16,111	....
Crop Acres per Man ..	Oxford	24	29	29	36	38	45	38	40	46
	Peel	....	....	47	....	58	61	....	63	....
Labor Income ...	Oxford	$524	$719	$763	$1,237	$1,296	$1,533	$1,873	$2,016	$2,282
	Peel	....	....	$507	....	$891	$1,091	....	$1,581	....

Before going further it may be well to define the term "Labor Income," which appears in this table, and in the two other tables which come later. The Labor Income of the farmer is the amount of money which he has left, after paying all his running expenses (labor, taxes, repairs to buildings and machinery, threshing, silo filling, etc.) the yearly depreciation of his buildings and machinery, and interest at five per cent. on his total capital invested. It is the amount earned by his own labor and managerial ability, and as such, is the measure of his financial success or failure.

Now in Table 1, we have the farms grouped according to size. By size is meant the tillable area, because certain two hundred acre farms having a high percentage of waste land are no better than other one hundred acre farms having all land tillable. In Peel County, there are not as many small farms as in Oxford. On the other hand, Oxford County farms are much more highly capitalized than are Peel County farms. Farms of thirty-nine tillable acres in Oxford County have a higher capitalization than farms of seventy-two tillable acres in Peel. This is because of cheaper land in Peel County and because of the larger amount of stock carried on the dairy farm. A considerable part of the Peel County farmers' revenue comes from the sale of cash crops—wheat, potatoes, alsike seed, etc.,—while the Oxford farmer depends more largely upon his live stock. This same condition accounts for the fact that the Peel County farmers worked almost twice as many crop acres each, as did Oxford farmers. But, on going down to the labor income column, we find that the labor income is proportionate to the capital invested. An Oxford farmer and a Peel farmer may be able to invest equal amounts of capital. The Oxford man buys a smaller farm because he must pay more per acre and must buy more live stock. The Peel County man buys a larger farm. Their labor incomes for the year will be approximately the same.

The next table (Table 2), shows a comparison of figures for the dairy section of Oxford County and the beef raising section of North Middlesex, for the crop season of 1918. The general farm practice in North Middlesex differs from that of any other part of the Province. It is the only section of Ontario from which large numbers of heavy steers are exported, directly off the grass. This is due to the peculiar adaptability of the soil to the production of pasture. The pasture of this area is particularly rich in fattening ingredients, and, moreover, it rarely burns up during July and August, except in cases of the most severe drought. Consequently, we find that a very large proportion of the land is given over to the grazing of beef cattle.

TABLE 2. OXFORD AND MIDDLESEX, 1918.

Tillable Acres		21 to 45	46 to 60	61 to 75	76 to 90	91 to 110	111 to 135	136 to 160	161 to 185	185 to 225	Over 225
Average Actual Size......	O.	48	61	91	104	114	147	179	201	263	...
	M.	..	70	100	102	118	151	197	202	256	351
Crop Acres	O.	32	41	52	62	68	88	98	102	143	...
	M.	..	31	45	53	56	63	71	75	87	102
Crop Acres per Man..	O.	28	30	28	33	36	36	40	44	44	...
	M.	..	23	31	34	35	34	36	35	34	35
Capital...	O.	$7,576	$9,463	$12,538	$14,338	$15,568	$19,203	$21,241	$24,265	$36,186	...
	M.	..	$8,256	$11,324	$11,789	$13,098	$16,543	$19,502	$21,181	$23,981	$36,612
Labor Income...	O.	$ 735	$ 936	$ 868	$ 1,158	$ 1,327	$ 1,440	$ 1,881	$ 2,159	$ 2,449	...
	M.	..	$ 235	$ 582	$ 545	$ 618	$ 952	$ 778	$ 1,270	$ 897	$ 1,734

In the above table, we may compare farms of equal size engaged in the dairy and beef business. The first striking feature is that the area actually under crop is much larger on the Oxford, than on the Middlesex farm. Secondly, with the exception of the two groups of hundred-acre farms (61-75 and 76-90 tillable acres) the acres of crops handled by each man is smaller in Middlesex than in Oxford. Thirdly, the capital invested is smaller on the beef farm than on the dairy farm of equal size. But the difference in capital is not great until the size of farm reaches quite large proportions. On comparing the labor incomes, we find them very much smaller on the Middlesex farms than on the Oxford farms. The reasons for this drop in the labor income are found chiefly in the first two features shown in the table. The Middlesex farmers have too much of their land in pasture, and grow too few crops. This cannot be due entirely to scarcity of labor because, on the average, they work less crop acres per man than do the farmers of Oxford, despite the fact that the latter have a large number of cows to milk each morning and night, while the former have not. In short, Oxford and Middlesex farmers are paid pretty much in accordance with the work they do.

Following up Table 2, we have prepared another smaller table (Table 3), which shows the effect of increasing the percentage of cropped land on Middlesex farms.

TABLE 3.—ACTUAL TILLABLE AREA IN PASTURE.

Percentage of Tillable Area in Pasture	Number of Farms	Actual Size Acres	Labor Income	100-Acre Farms	
				No. of Farms	Labor Income
			$		$
Under 20 per cent..........	35	104	765	34	763
20-30 per cent..............	38	116	678	32	580
30-40 per cent	33	132	654	23	522
40-50 per cent..............	34	144	839	19	422
Over 50 per cent............	32	167	600	14	175

The above table shows a steady decrease in the labor income as the percentage of tillable land in pasture increases (or as the percentage in crop decreases). Especially is this noticeable when the hundred-acre farms are considered by themselves. Thirty-four hundred-acre farms having less than twenty per cent. of tillable land in pasture made an average labor income of $763, whereas the fourteen hundred-acre farms, which had over half their tillable land in pasture, made labor incomes of only $175 each. It is quite evident then that this one factor has a very great influence on the labor income of the Middlesex farmer.

On going back to Table 2, and looking at the Oxford farms by themselves for a moment, you will notice that the group of 61-75 tillable acres made a slightly smaller average labor income than did the group of 46-60. Likewise, the group of 111-135 tillable acres made only slightly greater returns than did the group immediately smaller. These two sizes of farms are what might be termed "odd-sized" farms for dairying purposes. The 46-60 tillable acre farms are too large for one man, but too small for two; the 111-135 tillable acre farms are too large for two men, but too small for three. Consequently, these farms require greater managerial ability on the part of the operator than do farms of any other size—if they are to be run profitably. The size of farm which seems to be, perhaps, nearest the ideal for dairying purposes is the one having 90-110 acres tillable. In actual acres this farm is just a little over the hundred. The ten best farms in this group made labor incomes greater than the average of farms having over 186 acres tillable. Therefore, I think, I am quite safe in saying that when this size of farm is reached, methods of farming and methods of business count for more than increased acreage.

J. C. NEALE: At the beginning of this work, and in fact right up to the present, the great difficulty has been in persuading the farmers of the surveyed areas of the legitimacy and need of such a work. In the first survey made—in Caledon Township, Peel County—practically every third farm was a "turn-down." In subsequent surveys, the proportion of "turn-downs" has been smaller, but even last spring there were still many days when the field men were pretty much disheartened—when they came in at night to report one record and six "turn-downs." This skepticism on the part of so many farmers is, perhaps, due to the fact that they have not been able to see any benefits to themselves directly traceable to survey work. But since the conclusion of the field work of the last survey conducted, the results of survey work have been brought, more or less, into prominence. Last fall, when the Board of Commerce took a hand in the fixing of milk prices to the Toronto Milk and Cream Producers' Association, they summoned Mr. Leitch to give evidence on the cost of production of milk. The evidence given by Mr. Leitch was based absolutely on figures taken in surveys of dairy sections. It is not necessary to go into details of that here. Every man who reads the daily or farm press, has already become acquainted with the facts. But three years ago before the work of business surveys began, it would not have been possible to obtain authoritative information on the cost of production, except from the books of a few isolated farms. With such a concrete example of the value of statistical information on the business of farming, it seems to me that every farmer should be glad to do his part toward helping on the work—that is, to give a record of his own business cheerfully, and to the best of his ability.

On the other hand there are farmers who are willing to give records, but who claim that the record goes too much into detail. Detail is absolutely necessary to the working out of any results. One item of detail which has not been attempted as yet because of a fear of losing even more records, is the amount of food material which the farm supplies directly to the farmer's table. In our work so far we have taken absolutely no record of such items. But if such information could be obtained, it would make even a stronger defence against the charges that farmers are becoming profiteers. Many city men are of the opinion that practically all of the farmer's living comes directly from the farm. Nothing can be said to the contrary, because there are no figures available to back up such a statement. Too much detail in this work is an impossibility. And when it comes to cost accounting which it is anticipated will be commenced this spring, detail in everything is absolutely essential.

There is some opposition also on the ground that the information taken as it now is, by a visit to each farm once a year is too liable to error to be of value. While it is the contention of those in charge of the work that the information is accurate, an attempt is to be made this next spring to overcome this criticism. The records of the past summer and present winter's business must be taken in the old way, but on the completion of each survey this spring, two men will be left in each area to visit each farm once a month and take note of business transactions and farm operations in the season that they occur.

PLANT BREEDING FROM HORTICULTURAL STANDPOINTS.

PROF. J. W. CROW, O. A. COLLEGE, GUELPH.

We are concerned primarily with increasing the returns from labor applied to the land. Of the several methods open to us for accomplishing this result there is probably none more important than the improvement of plants and animals by breeding. We recognize that the scrub bull must go, and that the best knowledge we possess must be applied in the further improvement of our live stock. We recognize a tremendous increase in milk production per head because of the elimination of the unprofitable cow. In egg production, the science of breeding can be credited with doubling the flock average, but I do not think we yet realize the full importance of what this improvement could mean when applied to plants. The most outstanding results in plant breeding to date, have been in the improvement of cereal grains, but a great deal of valuable work is in progress at many points in the improvement of horticultural plants. You are all aware of the importance in agriculture of using the best variety, but, perhaps, you have not realized that in horticulture variety is tremendously more important than in agriculture. There is a far greater difference among varieties of fruits and vegetables than there is among field crops. I think it could be maintained that in fruit growing the most important factor making for success aside from the personality of the man himself is *the variety planted.*

It seems to me only logical that we should undertake, and at once, to apply in actual practice our newer knowledge of the principles of breeding. I would venture the statement that the value per acre of our fruit and vegetable crops can be increased easily by from twenty-five per cent. to fifty per cent. In some cases the improvement could be 500 or 1,000 per cent.

The Washington asparagus put out by Dr. J. B. Norton as a result of fifteen years of most thorough work is a case in point, and the work of Jones, of Wisconsin, in developing strains of cabbage resistant to yellows is likewise a classic example. Its success can be estimated only by comparing a full crop with a total failure.

We lose annually in Ontario thirty or forty per cent. of our apple crop through infection with apple scab fungus. There would appear to be no good reason to doubt the possibility of eliminating this great loss by incorporating the resistance to this disease of Duchess, Ribston, Blenheim and Hibernal with the good qualities of Spy, McIntosh, etc.

Among the several hundred varieties of fruit grown in this Province I can recall only one which is distinctly high class in dessert quality, cooking quality and shipping quality. This remarkable variety is the Reine Claude plum, which in the minds of plant breeders stands as a model of what we ought to have in apples, pears, peaches, cherries, grapes, strawberries, raspberries, etc. It is in very truth a paragon of virtues in comparison with which the best of our commercial varieties exhibit most serious defects, In my opinion this situation demands attention and we shall be guilty of criminal negligence if we fail to apply to this problem, the best intelligence we have. One of the greatest difficulties in connection with the originating of new varieties is the matter of getting them introduced. Mr. Macoun, of the Central Experimental Farm, Ottawa, has new varieties of apples of undoubted value which have fruited at Ottawa in some cases as long as twenty-five years, but which are not listed by nurserymen or known among the growers. In my opinion New York State has adopted the best possible plan of introduction, which is briefly as follows: The growers of the State have organized an Association known as the New York State Co-operative Fruit Testing Association, membership in which conveys simply the right to purchase trees and plants which are being introduced by the Association. The Experiment Station at Geneva turns over to the Association the exclusive right to propagate any new variety which may be deemed worthy of introduction. The Association places buds, scions, cuttings or plants with nurserymen for increase at contract price. When the stock is ready it is listed by the Association and offered for sale to the members at cost. Hansen, of South Dakota, operates a somewhat similar scheme, most successfully, through the State Horticultural Society, the basis of which as in the New York plan is that the members pay for what they get. My plan is that the new fruits and improved varieties of vegetables which are being developed in the Department of Horticulture will be listed and sold, as it is the almost universal experience of experiment stations that the public places a higher value on material they pay for than on stock offered free of charge.

Plant breeding work in the Department of Horticulture is proceeding along the following lines: In strawberries we are working on the improvement of commercial varieties and the development of high quality sorts for home use. We have a number of promising sorts ready for distribution and have sent out a number for trial. In apples we have a large number of seedlings five and six years old of the following crosses, all of which are still in nursery rows for lack of space to plant permanently:

Wealthy x McIntosh.
Wealthy x Wagener.
McIntosh x Spy.
McIntosh x Blenheim.
McIntosh x Ribston.

We have one seedling of McIntosh which has fruited four years and which appears very promising indeed. We have made a number of crosses in pears with the object of combining the hardiness and blight resistance of some of the Russian varieties with the quality of our best sorts.

In gooseberries we have crossed the English and American varieties in the effort to combine the good qualities of both.

In vegetables we have been for five years working to purify strains of the most important commercial varieties and are using the following sorts:—

Paris Golden Self Blanching Celery, of which we have three choice strains, one yellow, one medium green and one dark green; Southport Yellow Globe, and Danvers Onions, Chantenay Carrot, Detroit Beet, Glory of Enkhuizen Cabbage, Jersey Wakefield Cabbage, Garden Beans for disease resistance, Spinach for long standing, Cucumbers and Tomatoes for forcing, Grand Rapids Lettuce for forcing, Head Lettuce for long standing, Asparagus and Rhubarb.

MR. RAYNOR: I would like to ask why a great many of our Spy apples decayed in some parts of the country? Was it due to season?

PROF. CROW: I should say that this condition in the Spy apple was due to the character of the season. We had a most unusual season last year.

A MEMBER: What about the keeping qualities of the Wealthy and McIntosh cross?

PROF. CROW: The longer keeping apple is, of course, the McIntosh, and we would not expect anything in the progeny that would keep longer than the parents.

A MEMBER: The Wealthy spoils very quickly, but the McIntosh keeps longer; would there be a half-way difference between the two?

PROF. CROW: It would be possible to get an apple very much like the Wealthy that would keep longer.

RURAL COMMUNITY BETTERMENT.

REV. ROBERT SEGSWORTH, CHELTENHAM.

I am pleased to have the opportunity of speaking to the members of this Association, and pleased also to be privileged to speak on behalf of rural community betterment. I have always been interested in rural communities, having been brought up on one and having farmed for a number of years myself.

It is needless for me to impress upon any of you the importance of rural life. I am in perfect accord with the great statements made by Premier Drury. I believe with him that rural life is the basis of the nation. No nation in the past has ever gone to decay, except by the decay first of its rural people. As soon as any civilization becomes top-heavy cityward, she is heading for a fall, and our country is in the position to-day where our civilization is becoming top-heavy cityward.

There are people who tell us there is no such thing as rural depopulation and vacant lands. I have seen rural decay and depopulation and abandoned farms in Ontario not so very far from here. In the township in which I live, and it is one of the wealthy townships of this Province, at the last census there were 45 per cent. less citizens than there were fifty years ago, and I feel sure when the next census is taken, unless something takes place immediately, the decrease will be even more marked. Premier Drury said, you cannot drain from any community the most progressive and intelligent of her citizens without weakening its position, and we believe there has been drained from our rural communities, a great percentage of the most progressive and most thoughtful of our young people. The problem which faces us is to find the remedy. One of the things we need in rural districts is better financial returns.

Rural districts have not been getting their fair share of the wealth they have created. Increased financial returns, however, will not alone remedy this situation. I lived at one time in one of the most wealthy rural communities, and it was one of the most discontented. They were a prosperous people, but they were discontented. The mere increase of prosperity and financial returns would not remedy the situation in that place and will not remedy the situation in other places.

How are we going to remedy the situation? I believe one of the great factors will be rural community betterment, not just individual betterment, but rural community betterment.

In the days that are past, strong virile men and women came into those communities and by strength of their arm, by the power of their independence, by the strength of purpose that moved them, they hewed out for themselves their homes and the nucleus of their community life. To-day we need that same pioneer instinct, that same concentration of purpose, that same strength of mind and of will and courage which will enable us to gather up the fruits of the achievements of past generations and turn these into real active community life, a community life that is strong, full of self-confidence and desire for co-operation. No organization, no community, no institution that limits itself to itself can be permanent in itself. It is as true as that "he who liveth for himself dieth." That organization whose vision is bounded by itself is doomed to defeat. We must not only develop a strong, conscious community spirit, but we must also be a community that shall co-operate with every other organization and every other institution that is laboring for a common purpose and the common aim of building up the northern half of this continent. This community life and community spirit and community co-operation have not yet come. If you think it has, try and work it. It is bound to come, however, because I believe that it is in harmony with the Supreme Purpose of the Universe, and that there is one Eternal Personality whose ideals and purposes for the development of the human race cannot be and will not be overthrown.

How is it going to be brought about? If we wait for some new organization or new machinery or some new outside force to come in to make our community life what it ought to be, we will wait a long time. The forces and the organizations that are already there, must be the agencies which will complete and develop our community life. But these organizations that are now working need a new force, a new spirit and ideal and purpose, a new something in them that will make them properly conscious. The great forces of any community are the home, the school and the church. Without these three co-operating each with the other, all for one purpose, no centre can be what it ought to be, and there must be developed within the homes of our rural communities, the idea of something bigger than themselves.

You have heard of the old leader's prayer: "Oh, Lord, bless me and my wife, my son John and his wife; us four and no more." There are many of us pray that prayer; it does not pass our lips, but it is in our minds. Our limit of vision is bounded by the home and home centres in which we move. It becomes the centre of the universe. We must cease to make our homes the centre of the universe and realize that there is one great centre of the universe—good homes. They become a centre from which power and influence radiate out into the community to develop a higher life in the community, and from the community into the nation, and from the nation into the world.

I remember speaking at a place last fall, during the hurly-burly of the political campaign, on rural education and rural school system. A man sitting in a far corner of the room interrupted, and said: "It's a farce"—meaning that the rural school system to-day is a farce. The whole aim and purpose of the present rural school system is to graduate its members out of the rural districts into the Collegiates and High Schools, from them into the Universities and from the Universities into professional life, absolutely away from rural life and rural activities. That system must be readjusted. There must be developed rural schools based on rural principles with the aim and object of graduating its citizenship into rural life. It would be a good thing for our country if all the graduates of our rural schools remained rural citizens, but I do not know what the cities would do, nor the rural church.

There is a very great deal of atheism with regard to the church, its place and its function. The church is all right as long as you stay away from it and do not have much to do with it, is the attitude of a great many of our people, not only in the towns and cities but also in the rural districts. I have lived in rural districts where 50 per cent. of the citizens of that community had no active interest or association with any kind of church. If you made a survey, you would find everyone of them belonged to this or that denomination, but so far as any church in that community was concerned, it would not have existed had its existence depended upon them.

The church should not be supported by any individual simply for the sake of supporting the church. No institution should be supported in this country or in any other country simply for the sake of supporting that institution. Unless an organization compels the esteem and the respect of the citizens of that land, it is not worth supporting and should not have the support of the citizens. Unless the church is a contributing factor to the well being of the community, it has no right to be supported by the community. How do we know the church is a contributing factor? If you ask any church officials or leaders if the church is necessary, they are absolutely assured that it is and that the particular department or branch of the church with which they are associated is absolutely necessary—the others might not be. How are we to know? There may be churches that are not necessary; there may be individual organizations that are parasites, but that for which the church stands is absolutely essential. We believe that the church was brought into being by the Nazarene, that the ideals and principles that Jesus came to bring into this world might be so organized that they would come in vital contact with human individuals and human society all through the ages.

After expressing his opinion as to the object for which the church was originally established the speaker went on to say: It is the business of the church to-day to stimulate production that the hungry may be fed; it is the business of the church always to stimulate the production of food that there may be plenty in store for all. One of the finest works the church can do to-day is to stimulate such organizations as this Experimental Union.

Feed the hungry, cure the sick. How much of the sickness in the world is preventable? It is the business of the church to minister to the sick: it is the business of every community that is so inspired and directed to see to it that there will be less sickness in the community. In the medical inspection of schools, school nurses, the principles of hygiene, the laws of growth and development and the science of being born and all that has to do with the well-being of human life, it is the business of the church to lead. It should inspire leadership in everything that has to do with the well-being of community life.

How are we going to bring that about? You know as well as I do that the successful church to-day is the church that can play its part regardless of any other organization or any other institution. The aim and ideal of the churches, as I know them, is to build up our institutions. The aim and ideal of organized Christianity is to go into a community and function as the agency for bringing good into the community.

If this is going to come about, then we must have leadership, trained leadership. Our educational system has been trained from the city point of view for the development of city life, so our church leadership has been trained from the city point of view for city leadership. The preacher who is doomed to stay in the country is looked upon as a sort of poor fellow who was not much good, so he never got a city church: he was rather promising at school, but he lacked the "pep" to get a city church. There has been developed in rural communities the idea that the best in preachers was too good for them; the second, third and fourth best would do. We must develop in our communities, the ideal that rural life deserves the best, and its leaders must be trained to function as rural leaders and not as city leaders.

Regarding the membership of the church: the rural church of to-morrow is very largely in the hands of the young men and the women of to-day. Having a church in a community that ministers to the needs of the community and inspires leadership, and having the right kind of homes and schools, we may expect to develop a rural community that shall be strong, virile, self-conscious, self-reliant, co-operating with other institutions, that shall bring into being a nation that shall function as a nation should.

Mr. G. A. **Putnam**, Superintendent of Institutes, Toronto, continuing the discussion of rural community betterment, said that it required the co-operation of all classes of the community rather than the services of paid officials. Recreation was essential to healthy social life. The cultivation of neighborliness should also be a leading feature of community work, as the social side of life was just as important as the intellectual, moral or economic. He cited several cases of community welfare work along these lines practised by Institutes.

Miss M. U. **Watson**, O. A. C., Guelph, followed on the same topic, chiefly urging the co-operation of all in community effort, or, as she termed it, doing "team work." Another necessary element to success was perseverance, or "seeing the thing through."

ADDRESS.

Hon. E. C. Drury, Premier of the Province of Ontario, Toronto.

As the Chairman has remarked, I am no stranger to this Institution; in fact, I am no stranger to this platform. I very well remember the spirited debates which were carried on twenty odd years ago in this building, and in which I sometimes took part. I have always a very tender spot in my heart for the old institution. I have always a deep interest in the work that is going on, and I must confess that I have an ideal of what that work should be. So it is with a feeling of a great deal of pleasure I am here to-night to meet some of the graduates, and many of those who will be graduates of this great institution.

I am sorry that you have not a building capable of holding the whole student body of the institution, but I am glad to know that the memorial which is to be erected to the heroes from this institution who fell in the Great War, is to take the form of a hall. I can think of no more appropriate memorial—I can think of no more useful memorial—and there is no reason why a memorial perpetuated by a hall, dedicated to human needs, should not be the most acceptable and the most worthy sort of memorial that could be erected. I wish the promoters of the

Memorial Hall every success, and I think I might go so far as to intimate that the Government, of which I am the head, will consider very favorably lending assistance toward that Memorial Hall.

My father was the first Minister of Agriculture in Ontario. At the time he took over the Ministry, I can very well remember the thought that was in the minds of most people in regard to the Agricultural College. It was an experiment; most people thought that farmers did not need any training, that it was a waste of time. The population of the College at that time was small. It was an institution that was condemned and contemned by public men; it was hard to get grants through. I have heard my father state, more than once, how difficult it was to pass a grant of a few thousand dollars through the Legislature, because everybody thought this enterprise was doomed to fail; farmers did not need anything but muscle in order to succeed in their calling and training was out of place.

The ideal of the Agricultural College, in the minds of those who fought for it and stood by it during the early days, was a good one, and it was a sound one. It was an ideal that will bear repeating and emphasizing at the present time, and it was this: An educated, trained, contented, yeomanry on the farms of this country, and the Agricultural College was intended to minister to that ideal—to train men to go out on the farms of the Province, men who would be educated not only along the thousand lines of their calling professionally, but educated broadly so as to become good citizens. And I believe that ideal was the correct one.

The rural people of this country have a destiny to fulfil that can never be fulfilled by any other class of the population. I believe what the rural people of this Province and of this country are, ultimately the whole people of this country will be. No greater calamity could happen to us than that the standard of our rural people should in any sense be lowered. No greater calamity could happen to us as a nation, to the status of this land, to the centres of thought in this land, than that the standard of life and the standard of intelligence on the farms and in the farm homes should be lowered. We have a great fight to put up. There has been a tendency going on during a great number of years for the young men and women to leave the farms and go into the cities. Various causes have been urged; some say the bright lights attract them. I do not believe that true, because while there may be such a thing as "lights" of the city, for me the life of the field is far stronger than the life of the city, and I believe to most people it is stronger. But one condition and another have led to the depopulation of the rural parts of our nation—families leaving one by one for the city. But their lands will not be vacant long; we may for a time have a reduction of the people on the land, but ultimately the land will be filled up. Who shall fill it up? Let us hope and pray it may be no inferior race. For my own part, I think the greatest calamity that could happen in this country could take two forms; one, the occupying of the farms by an inferior race of people, and the other, the introduction of a permanent farm labor class. From those two evils, may the Good Lord deliver us—the Good Lord, common sense and patriotism. The ideal for us to live up to, to put forward and make possible in our own lives is that of an intelligent, contented yeomanry living on and working with their own hands their own acres, and passing those acres down from father to son throughout the generations with the wealth of tradition which gathers in such ownership of land. We must not aim at tenantry, a permanent farm labor class nor an inferior race of people on the farms; any one of these things will bring about such a serious deterioration in the citizenship of this country as will influence the whole life of the people, and with all due deference to a jocular statement made by our Chairman, we do not want 100,000 Chinamen on the farms of this country. We do want, and we must have if we are going to assimilate and Canadianize the swarms of people that will be coming to our shores, several hundred thousand British born, British idealized people on the farms of this country; then we may be assured that the people coming to our shores will be made one in race, in ideals and in life. If we allow, through one cause or another, our Anglo-Saxon yeomanry to drift into the cities and allow the rural neighborhoods to be occupied by a race with lower standards of living, and perhaps living under conditions of tenantry or of laborers, we are going to lower our power of assimilation and lose the ideal we should have before us in building up the country.

I believe it is the true function of this college, as it is of the associations gathered around it, to bring about that ideal. This college during the past years has turned out a great many men who have done important work as teachers and professors of agriculture, we must admit that. The District Representatives planted here and there over Ontario have been a credit to themselves and to this institution and have done good work, but they do not do all the work by any means. There is only one thing that can save the farms of this country for our own people and for the ideals that we must have in mind, and that is the farmers themselves. No other force can do it. We cannot teach them and exhort them and guide them into the proper paths; it has been tried with not altogether satisfactory results. You cannot exhort a man into producing more grain or following a better path of life. The best our institutions can do is to answer the questions the man on the land wants answered and cannot answer for himself. That is the legitimate function of the experiments of this Experimental Union—to answer the questions of the man on the land and have the answers ready when they need them. If I may criticize some of the work that has been done, I might say that the question, in some cases, has been answered after everyone else has found out the answer for himself. We must be prepared through our Experimental Stations, through our laboratories, through our institutions, to answer the questions and have the answers ready when the farmer wants them on his farm. When the question comes up: Is this new plant a thing to be preserved? Is this new method to be followed? The answer should be ready if this institution and the others are fulfilling their function experimentally and leading to practical agriculture. Beyond that, the great function of this institution and every agricultural school in this country should be to turn back men on to the land. Turn back your short course men. We expect they will go back on the land prepared to do better work and to be better citizens because of their short course. They should go back to their rural neighborhoods not only prepared to farm better, but prepared to be better leaders in their neighborhoods, prepared to bring back ideals of social service, ideals of citizenship that they never would have got within the confines of their country neighborhood, because, after all, rural life has its difficulties and limitations. One is that people are inclined to think their horizon encompasses the world. I do not think that is so noticeable during the past few years as previously. Men will go back after being in this institution, after having met and rubbed shoulders with the students and the staff, with a broader horizon, prepared to live that life which they left behind them and make it a thing worth while.

Your short course men will go back, but what about your graduates? We need them back on the farms more than the short course men. Do you ever think of the bankruptcy or the drain on the rural people caused by the fact that nearly all the people of higher education go to the city? Every rural neighborhood turns out its quota of university men, creditable men; the best men that go through the universities are those who come from the rural districts, with the strength of the soil in their veins, but they do not go back to the farms. That is the sadness of it. The brightest boys and girls who are the cleverest and have the most ambition, go through the schools and do not return. No people can stand that continuous drain and keep up their standards. Our rural neighborhoods by this process must finally lose ground and retrograde. We do not want that. If we are to maintain standards of intelligence and power, we must turn back on the farm some of the best educated men we have. Your degree men are wanted on the farms. They are wanted as leaders in the community, to solve the great rural educational problems, not in the sense of teachers, but in the sense of citizens. We want them there not only to live out their own lives, but to influence those around them, to be uplifters, not the sort of uplifter that bows down off a raised pedestal and grabs the other fellow by the collar and yanks him up, but the uplifter who shows the way, leads the procession up the hill to a higher level. I have not much faith in the uplifter who reaches down from a height to help the other fellow. I have, however, a great deal of confidence in the one who says: "I will show you the way; I will lead you up the hill," and I believe this College in sending back its brightest and best trained men, to be farmers and citizens, to be men interested in education at home, men interested in the rural church and the rural school, will do its best service for the farms of this country.

You say the farm is not sufficiently attractive financially. Quite true. The economical problem is after all at the bottom of rural depopulation, but if it is not financially satisfactory, if something is wrong with it who, in the name of common sense, is going to lead the way out of conditions of unprofitableness into conditions where men can make an adequate living, but the men who have been educated and go back on the farms? If we continually leave the uneducated men to the farms, if we continually leave those less ambitious to the farms, undoubtedly a lower standard of life will be accepted, and instead of building up in this Province an English-speaking Anglo-Saxon yeomanry, we will build up a peasantry, and I fear if we do build up that peasantry, it will not be altogether Anglo-Saxon. We will have one such as they have in Europe, perhaps such as they have in the Eastern European nations. Our ideal is a yeomanry, not a peasantry.

You young men have it in you to realize this ideal, you men who are going through college and will go out strong and fresh to carry on the battle, you have it in you to realize this ideal, by working on the farm and showing that it is more important to realize for this country the ideal that was in the minds of those who came across the sea hundreds of years ago and pioneered in this Province, than to leave the rural districts and spend the wealth of your training and education in the cities.

I do not think we sufficiently honor the men who came out from the old land and founded Canada when they founded Ontario. That may be rather a mixed statement; there are other Provinces who think they are leaders in Canadian life, but I believe Ontario has set the standard of Canadian thought both east and west, and the men who came out 100 years ago or more, from the old land or across from the States, into the wilderness that was then Ontario, were men who came not only to make homes but to found a community. They were men with ideals, who valued freedom and civic advancement and citizenship, and we are their children. They endured hardships when they came into this wilderness. Three generations have lived and cultivated the country, but we, the third generation, are inclined to lose sight of the ideals which filled the pioneers of this country. The ideal we can live up to and the best service we can do is a life devoted to raising the standards of the rural citizenship of this Province.

Your college has done good work in the past in that direction. It has realized in some measure at least the thought that was in the minds of those who founded this institution. I believe in the future it can do still better work, and what I would like to see realized is this: that young men will come here and get the best education this institution can give with the idea and thought in their minds of going back and living their life on the farm. You will meet difficulties, of course. Nothing is worth doing that has no difficulties in it. Life would not be worth living without difficulties and troubles. Where I am now is perhaps a life I have never been used to, but it would be very tame indeed if there were not a number of difficulties to face. Fortunately for us, certain people have taken upon themselves to see that life does not grow stale; in fact, we have a rather lively time of it.

The boy who returns to the farm is bound to meet difficulties, but what are you made for except to overcome difficulties? A man's place is the hard place. The men who really accomplish things in this world are the men who have an ideal and who stick to it through dark days and bright days, when the sun is shining and when the sky is black with clouds, and who work at it. Anybody can go with the crowd; anybody can enjoy life when everything is going their own way, but it takes a man and the best sort of man to stick to an ideal through years of discouragement, when the popular applause is the other way, through years when you think perhaps you are going to be a failure, but if you stick to it, you will carry it to a success in the end. I believe the young men of this country and the student body of this institution are men of the latter sort. The quitter may sometimes get an easy living; he may take the line of least resistance and wriggle through life, but in the end you will find he has not accomplished very much. The men who accomplish things in this world are the stickers, not the quitters. In your hands and the hands of thousands of other young men throughout this Province lies more than the fate of agriculture in this Province; in your hands lies the fate of our whole country, lies the standard of citizenship, lies the future of the Anglo-Saxon race in this country.

You have laid on your shoulders great responsibilities, but you have equally great privileges, and the thought I would like to leave with you in closing is that this institution should train men of standards and ideals who can set their face in a given direction and stick to it until they win. If you make the establishment of a rural community here such as we ought to have, your ideal, then future generations will rise up and call you blessed, because you will have saved Canada and made Canada a place worth living in. You will have founded a farming community and a farm life and a farm population that will act as a steadying force in this country as the years go by. It is an ideal worth living for. It is one any man can afford to give the best of his life in an effort to realize it. It is one that we can hold steadfastly before us during the years of ups and downs, and in the realization of it, we will have realized a dream and an ideal that cannot be met anywhere, one that is worthy of each of us giving all we have and all we can do to bring about.

It is a great pleasure for me to be here to-night; it is a great pleasure to renew acquaintances with the old institution; it is a great pleasure to stand before this audience, which is so like and yet so much larger than the audiences I used to see in this hall 22 or 23 years ago, and it gives me a great deal of happiness to wish you and this institution the best of success. So long as we have the opportunity, our Government will do the best we can for this institution and for its advancement. We hope as the years go on, more and more this college will train and send out into the rural communities young men who can take the place of leadership that I have endeavored to put before you to-night.

I thank you, ladies and gentlemen, and Mr. President for the privilege of being here to-night, because I really consider it a privilege.

PROF. J. W. ROBERTSON delivered an address on "Agricultural and Economic Conditions." [His address will appear in the Report of the Dairymens' Association for 1919.]

Ontario Department of Agriculture

REPORT

OF THE

Stallion Enrolment Board

OF

ONTARIO

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1919

Printed by
THE RYERSON PRESS

To His Honour SIR JOHN STRATHEARN HENDRIE, C.V.O., a Lieutenant-Colonel in the Militia of Canada, etc., etc., etc.,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

The undersigned begs to present for the consideration of Your Honour the Report of the Stallion Enrolment Board for 1919.

Respectfully submitted,

GEO. S. HENRY,

Minister of Agriculture.

TORONTO, 1919.

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ONTARIO STALLION ENROLMENT BOARD

LIEUT.-COL. R. MCEWEN, London, Ont., *Chairman.*

JOHN GARDHOUSE, Weston, Ont.

F. C. GRENSIDE, V.S., Guelph, Ont.

PETER CHRISTIE, Manchester, Ont.

R. W. WADE, Parliament Buildings, Toronto, Ont., *Secretary.*

STALLION ENROLMENT BOARD

1919

To The Honourable G. H. Henry,

Minister of Agriculture for Ontario.

Sir:—The Ontario Stallion Enrolment Board has the honour to transmit herewith its report for the stallion year ending July 31st, 1919.

It will be noted the number of stallions enrolled for 1919 is 1729, and as these are all pure bred it shows an increase of enrolment of pure bred sires of 194 over the year 1918. In addition to the regular Enrolment Certificates issued there were 25 Interim Certificates by reason of the fact that the owners failed to secure proper transfer of ownership. There were also 10 stallion owners who did not furnish the Registration Certificates, therefore no Enrolment Certificates could be issued.

The analysis of the table of breeds shows approximately 80 per cent. of the enrolled horses belong to the heavy draught breeds, and of the heavy draught breeds 71 per cent. are Clydesdales. Of the light horse breeds approximately 80 per cent. are standard-breds.

It has been found necessary to charge an increased fee where the owners failed to present their horses at the regular fall inspection. As the enrolment report contains full information regarding inspection the stallion owners have no reason for not presenting their horses at the regular inspection time.

Through wilfulnss or carelessness a number of the stallion owners have failed to comply with the Act, and there have been approximately forty prosecutions under the Ontario Stallion Enrolment Act.

It was considered advisable to furnish a few notes on registration, soundness and breeding, and while it was not possible to include an account of each breed found in the Province it is hoped that fuller information may be given in subsequent reports.

All of which is respectfully submitted.

Robert McEwen, *Chairman.*
R. W. Wade, *Secretary.*

Toronto, August 14th, 1919.

"The Ontario Stallion Act"

Chap. 249, R.S.O., 1914.

As amended by 4 Geo. V, chap. 44 and 5 Geo. V, chap. 20, sec. 22.

1. This Act may be cited as THE ONTARIO STALLION ACT.

2. For the purpose of this Act,

(1) The Lieutenant-Governor in Council upon the recommendation of the Minister of Agriculture shall appoint four persons who, with the Director of the Live Stock Branch of the Department of Agriculture, shall constitute the Stallion Enrolment Board, hereinafter called "The Board."

(2) The Director of the Live Stock Branch of the Department of Agriculture shall be the Secretary and Executive Officer of the Board.

3. The Minister of Agriculture may from time to time appoint competent persons to act as inspectors under the direction of the Board.

4. The appointed members of the Board and the Inspectors shall receive such per diem remuneration and allowance for necessary travelling expenses as may be fixed by the Lieutenant-Governor in Council out of monies voted by the Assembly.

5.—(1) No person shall stand, travel or offer for use or sale any stallion unless and until the name, description and pedigree of such stallion has been enrolled, and such stallion has been inspected in accordance with the provisions of this Act and a certificate of such enrolment and inspection has been issued as hereinafter provided.

(2) For the purposes of enrolment the owner of every stallion shall submit to the board all evidence of the breeding and ownership of such stallion.

(3) The owner of every stallion shall submit the same for inspection under this Act at such times and places as may be fixed by the board, who shall give notice thereof in such manner as may be prescribed by the regulations. Persons having stallions inspected shall submit to the board such evidence of the breeding and ownership of the stallion as may be required by the regulations and a report of such inspection shall be made to the Board.

(4) Upon the receipt of the report of inspection and the evidence of breeding and ownership and upon payment of the fee, the Board shall issue a certificate accordingly, and all certificates of enrolment and inspection shall be renewed annually in accordance with the regulations and upon payment of the prescribed fee.

6.—(1) The Board shall keep a register for the enrolment of stallions which register shall be kept in such form and shall contain such particulars, including the report of inspection, as may be prescribed by the regulations and the certificate shall be issued in accordance therewith.

(2) Every stallion shall be enrolled in the name of the owner at the time of the enrolment, and in case of a change of ownership the enrolment shall be deemed to be cancelled unless within thirty days thereafter evidence of the change of ownership satisfactory to the Board has been furnished to the Board, in which case a transfer certificate shall be issued by the Board.

(3) When a certificate of enrolment has been issued after the first day of August in any year the enrolment and certificate of enrolment and inspection of the stallion shall remain in force until the 31st day of December in the next succeeding year, and when the enrolment has been made before the first day of August in any year the enrolment and certificate thereof shall remain in force until the 31st day of December next following.

(4) When a stallion has reached the age of seven years the first inspection thereafter shall be the final inspection and the enrolment made on the report of such final inspection shall continue to form part of the enrolment and a certificate shall be granted in accordance therewith on each subsequent renewal of such enrolment.

(5) In the case of any other stallion the report of inspection shall be valid for two years only except as provided in subsection 3.

7. On and after the first day of August, 1916, no grade stallion having any of the diseases or malformations mentioned in the regulations passed in pursuance of this Act shall be allowed to stand, travel or be offered for service in the Province of Ontario and from and after that day no fees shall be collectible for the services of such stallion.

8. On and after the first day of August, 1918, no "grade stallion" as defined in the said regulations shall be allowed to stand, travel or be offered for service in the Province and, on and after such day, no fees shall be collectible for the services thereof.

9. In case of dissatisfaction the owner of any stallion may appeal to the Board from any inspection, and upon the owner depositing with the Board an amount sufficient in the opinion of the Board to cover the expenses of an additional inspection the Board shall direct a further inspection which shall be final.

10. The Board upon consideration of the report of the Committee and after the inspection of the papers supplied relating to the breeding and ownership of the stallion, and upon payment of the fee fixed by this Act, shall make such enrolment of the name, description and pedigree of the stallion in the register herein provided for as may be deemed warranted and shall issue a certificate in accordance with such enrolment to the owner of the stallion.

11.—(1) The certificate of enrolment and inspection of any stallion shall form a prominent part of any newspaper or other printed advertisement issued to advertise such stallion.

(2) Every poster issued shall contain a copy of the certificate of enrolment printed in bold face and conspicuous type and shall not contain any illustrations, pedigree or other matter which is untruthful or misleading.

(3) Where no posters are used to advertise a stallion, the owner of the stallion shall exhibit to the owner of each mare, at the time of service, if demanded, the original enrolment certificate issued for such stallion.

12.—(1) The fees to be paid to the Board before the issue of any certificate shall be:

For enrolment	$2.00
For inspection	3.00
For renewal of enrolment	1.00
For transfer certificate	.50

(2) The fees received by the Board under this Act shall be paid over to the Treasurer of Ontario for the use of the Province.

13. The Board, subject to the approval of the Lieutenant-Governor in Council, may make such regulations as may be deemed proper and necessary for the better carrying out of the provisions of the Act.

14. Every person who is guilty of a contravention of any of the provisions of this Act shall incur a penalty of not less than $25, nor more than $100, recoverable under The Ontario Summary Convictions Act.

REGULATIONS PASSED UNDER THE AUTHORITY OF SECTION 13 OF "THE ONTARIO STALLION ACT"

1. Meetings at regular intervals may be arranged by the Board by resolution and shall be known as regular meetings. Special meetings of the Board may be held upon notice by letter addressed by the Secretary to the home address of each member of the Board and regularly posted in Toronto at least five days previous to the meeting. A meeting may be held at any time without notice where all the members of the Board are present or signify by letter their consent to the holding of such meeting.

2. At any meeting whether regular or special, three members shall form a quorum for the transaction of any business of the Board.

3. A chairman shall be appointed who shall have the right to vote on any question before the Board, and in case of a tie, shall have a second or casting vote.

4. Application for enrolment shall be made in such form as the Board may prescribe, said application shall be accompanied by the necessary fees.

(a) The following shall be included as part of the application: "In consideration of the certificate to be issued and delivered to me in pursuance of this application, I hereby agree that I will deliver the same up to the Board upon demand, and will, in case of a sale of the above named stallion, execute a transfer of the said stallion to the purchaser in the form prescribed by the Board and thereupon deliver the said certificate with said transfer so executed, to the Board or to the purchaser as the case may require. It is further agreed that the certificate shall always be the property of the Board and subject to their control and direction at any time."

5. A report shall be issued by the Board annually, showing the names and addresses of the owners of stallions enrolled, the number of stallions and such particulars regarding the stallion as the Board may decide upon, and such other matters as the Board consider advisable.

6. Each certificate shall be issued under the seal of the Board authenticated by the signatures of the Chairman and the Secretary, who are authorized to issue the same in accordance with the decisions of the Board.

7. In case of the transfer of a stallion a new certificate shall be issued in the name of the transferee, and except in cases of dispute as to ownership, the Chairman and Secretary are, where a transfer of ownership has taken place, authorized to issue new certificates without reference to the Board, provided the regulations of the Board dealing therewith have been complied with. If a dispute as to ownership arises subsequently to the issue of the new certificate, the Board may recall such new certificate.

8. The Board may appoint a Vice-Chairman, who during the absence of the Chairman shall have all the powers and perform all the duties of the Chairman.

9. Each certificate issued shall, as the case may require, be in one of the following forms:

Inspection is necessary every second year until the horse has passed seven years, but this Certificate must be renewed each year.

APPROVED Enrolment No.________ **FORM A 1**

Certificate of Enrolment and Inspection

OF THE

PURE BRED

STALLION

________________ Registered in the ________________ Stud Book as No.______

Owned by ________________ of ________________ Foaled in ______

has been enrolled under THE ONTARIO STALLION ACT. Inspected on the ________ day of ________ 19____, and found to be sound, of good conformation and an animal typical of the breed.

THE ONTARIO STALLION ENROLMENT BOARD.

________________ Chairman

________________ Secretary

Dated at Toronto, Ontario, the ______ day of ________ 19____

GOOD UNTIL DECEMBER 31st, 1920.

Application for Renewal and Transfer on back of Certificate.

Inspection is necessary every second year until the horse has passed seven years, but this Certificate must be renewed each year.

PASSED Enrolment No.......... **FORM 1.**

Certificate of Enrolment and Inspection

OF THE

PURE BRED

STALLION

.... Registered in the .... Stud Book as No......

Owned by .... of .... Foaled in ......

has been enrolled under THE ONTARIO STALLION ACT. Inspected on the .... day of ________ 19......, and Passed.

THE ONTARIO STALLION ENROLMENT BOARD.

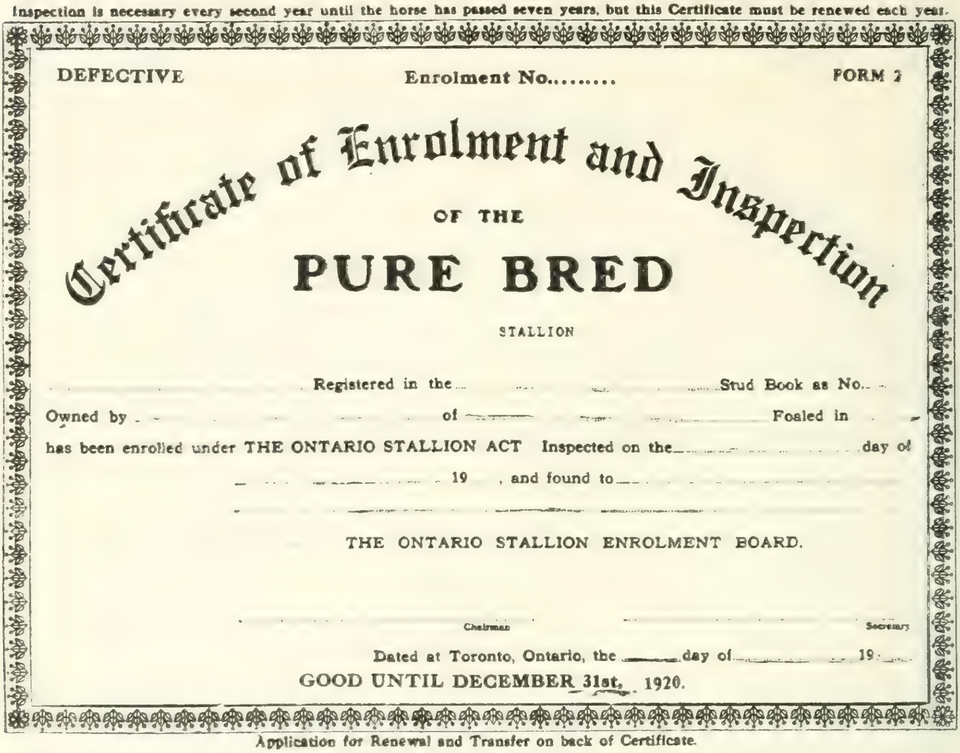
________________ Chairman

________________ Secretary

Dated at Toronto, Ontario, the ______ day of .... 19____

GOOD UNTIL DECEMBER 31st, 1920.

Application for Renewal and Transfer on back of Certificate.



Inspection is necessary every second year until the horse has passed seven years, but this Certificate must be renewed each year.

DEFECTIVE **Enrolment No.........** **FORM 2**

Certificate of Enrolment and Inspection

OF THE

PURE BRED

STALLION

Registered in the Stud Book as No.

Owned by of Foaled in

has been enrolled under THE ONTARIO STALLION ACT Inspected on the day of

19 , and found to

THE ONTARIO STALLION ENROLMENT BOARD.

Chairman Secretary

Dated at Toronto, Ontario, the day of 19

GOOD UNTIL DECEMBER 31st, 1920.

Application for Renewal and Transfer on back of Certificate.

Enrolment No.....................................

Premium No.................................

This is to Certify that the...

Stallion...

Registered in the...

Stud Book as No.............................. Foaled in...................................

Owned by...

of..

Recommended by the Premium Inspection Board as a
Premium Horse for the year 1920

....
Chairman

....
Secretary

10. For the purposes of this Act:—

(*a*) A pure-bred stallion shall be considered to be one registered in one of the records affiliated with the Canadian National Live Stock Recorders, or in case there is no such record for the breed, in one of the records recognized as authentic by the Canadian National Live Stock Record Board.

(*b*) A grade shall be considered to be any other stallion.

11. The following shall be considered diseases or malformations, as the case may be, under these regulations: Bone spavin; curb, when associated with a formation of hock which predisposes to curb; bog spavin, when associated with a formation of hock which predisposes to bog spavin; ring bone; string-halt; side bone; roaring or whistling; periodic ophthalmia; navicular disease; and radical defect or defects or general defectiveness of conformation rendering the stallion unsuitable for use in the stud.

12. In the case of a pure-bred stallion of a breed for which there is a Canadian Record the Board shall as evidence of breeding and ownership require a certificate of registration issued by the Canadian National Live Stock Record Board showing the applicant for enrolment to be the recorded owner, and in the case of a pure-bred stallion of a breed for which there is no Canadian Record, a Certificate of Registration of a foreign record recognized as reliable by the Canadian National Live Stock Record Board, showing the applicant for enrolment to be the recorded owner. In the case, however, of certificates of such foreign records the Board may accept such evidence of ownership as to the Board seems proper. Provided that in case of a dispute as to ownership or if a vendor for any reason refuses or is unwilling or unable, or neglects to execute a proper transfer, the Board may accept such evidence of ownership as to it seems sufficient and issue a certificate accordingly.

13. The certificate issued by the Board shall be the property of the Board, and each applicant for a certificate of enrolment or transfer shall be required in his application to agree to surrender to the Board upon demand the certificate to be issued, and in case of the sale of the stallion mentioned in such certificate, to agree to sign a transfer to the purchaser in the form prescribed by the Board. The Board shall have such status and power as may be necessary to enforce such agreements in any court of competent jurisdiction.

14. The purchaser of an enrolled stallion shall, upon the sale, obtain from the vendor the certificate of enrolment and inspection with a transfer endorsed thereon in the prescribed form and signed by the vendor (who, if the law and these regulations have been complied with will be the owner according to the record of enrolment), and forthwith transmit the same to the Secretary of the Board. The Board will, upon receipt of the same, properly signed, issue a new certificate in the name of the purchaser.

15. The Seal, an impression of which appears in the margin hereof, shall be the Seal of the Board.

16. The Board may cancel any certificate of enrolment which has been issued by it upon representation subsequently proved to its satisfaction to have been incorrect.

17. A notice of the time and place of inspections may be given by advertisement in such local papers as may be designated by the Board in at least two issues thereof.

18. Each owner of a stallion shall transmit to the Secretary of the Board a copy of every poster or other advertisement issued or used for the purpose of advertising such stallion forthwith after the issue thereof. In default of compliance with this regulation, the Board may cancel any certificate issued for such stallion.

19. The Register of Enrolment shall be kept in a book and shall be in the form and contain the particulars indicated by the following form:

REGISTER OF ENROLMENT

File No. ....**Enrolment No**...............**Breed** ....

Name of Stallion........................**Registration No.** ....

Color..................................**Year of Birth** ....

Inspected by ....**Date**...................................

Report ....

Inspected by ....**Date**...................................

Report ....

Inspected by ....**Date**...................................

Report ....

Inspected by ....**Date**...................................

Report ....

Cert.	Date Issued.	Date of Sale.	Owner.	Address.	County.
....	....	....	....	....	....
....	....	....	....	....	....
....	....	....	....	....	....
....	....	....	....	....	....
....	....	....	....	....	....
....	....	....	....	....	....
....	....	....	....	....	....

The Board may, from time to time, alter the above form, and vary or add to the above indicated particulars.

20. Notice of cancellation of a certificate shall be in writing, signed by the Secretary of the Board, and regularly posted in Toronto by registered post, addressed to the owner at his address, according to the record of enrolment, and cancellation, except as provided by section 6, subsection 2 of the Act, shall be deemed to take place at the end of the tenth day after the day upon which such notice was so posted.

21. Where a certificate is cancelled by reason of failure to comply with subsection 2 of section 6 of the Act, or for other cause, the Board may issue a new certificate to the owner upon his application.

22. All stallions imported to the Province shall be inspected within two months from date of arrival. Importers shall notify the Board immediately upon the arrival of importations, and the Board shall send inspectors to the stable of the importer or such other place as may be agreed upon within said two months from date of arrival.

23. (a) In case of necessity, where an application cannot be dealt with immediately by the Board, the Chairman and Secretary may issue an interim certificate, which shall be valid for all purposes under the Act, until the application is dealt with by the Board, and which shall be in the following form:

ONTARIO STALLION ENROLMENT BOARD

This is to certify that ....

of........................has applied for enrolment of the..........................

Stallion..................................and that such application is being considered

by the Board.

..................................Secretary. ....Chairman.

Toronto,

................19....

(*b*) Interim certificates may be issued for a certain specified time.

BOOKS OF RECORD ESTABLISHED IN CANADA

HORSES.

Name of Breed.	Book of Record.	Name of Association.
Clydesdale	Clydesdale Stud Book of Canada	Clydesdale Horse Association of Canada.
Hackney	Canadian Hackney Stud Book	Canadian Hackney Horse Society.
Shire	Canadian Shire Horse Stud Book	Canadian Shire Horse Association.
Percheron	Canadian Percheron Stud Book	Canadian Percheron Horse Breeders' Association.
Thoroughbred	Canadian Thoroughbred Stud Book	Canadian Thoroughbred Horse Society.
Belgian Draft	Canadian Belgian Draft Stud Book	Canadian Belgian Draft Horse Breeders' Association.
French-Canadian	French-Canadian Horse Breeders' Stud Book	French-Canadian Horse Breeders' Association of Canada.
Shetland, Welsh, New Forest, Polo and Riding, Exmoor and Hackney Ponies	Canadian Pony Stud Book	Canadian Pony Society.
French Coach	Canadian French Coach Stud Book	Canadian French Coach Horse Breeders' Association.
Suffolk	Canadian Suffolk Horse Stud Book	Canadian Suffolk Horse Society.
Standard Bred	Canadian Standard Bred Stud Book	Canadian Standard Bred Horse Society.

RECOGNIZED BRITISH, UNITED STATES AND FOREIGN RECORDS.

HORSES.

Name of Breed.	Book of Record.	Name of Association.
Cleveland Bay	Cleveland Bay Stud Book	Cleveland Bay Horse Society of Great Britain and Ireland, Nunthrope, R.S.O., England.
	American Cleveland Bay Stud Book	Cleveland Bay Society of America, West Orange, N.J., U.S.A.
Yorkshire Coach	Yorkshire Coach Horse Stud Book	Yorkshire Coach Horse Society of Great Britain and Ireland, Bolton Perdy, R.S.O., England.
Morgan	American Morgan Register	American Morgan Register Association, Middlebury, Vt., U.S.A.
Saddle Horse	American Saddle Horse Register	American Saddle Horse Breeders' Association, Louisville, Ky., U.S.A.
Hunter	Hunter Stud Book	Hunter's Improvement Society, 12 Hanover Square, London, England.
Arab	Stud Book of the Arabian Horse Club of America	Arabian Horse Club of America, Newburgh, N.Y., U.S.A.
German Coach	German, Hanoverian and Oldenburg Coach Horse Stud Book	German, Hanovarian and Oldenburg Coach Horse Association of America.

The above are the various Horse Associations, registration certificates from which are necessary before a stallion can be enrolled as a pure-bred.

Not only must the registration certificate from the above Associations be furnished, but the registration certificate must show that the person making application for the enrolment of a stallion is the recorded owner.

In buying a stallion, the buyer should make it one of the articles of agreement that the animal purchased shall be recorded in his (the buyer's) name in the stud book established for that particular breed of horse.

The fees charged by the various Horse Associations for the transfer of ownership in the Canadian National Live Stock Records at Ottawa are given below:—

	Member.	Non-Member.
Clydesdale	$0 50	$1 00
Hackney	1 00	2 00
Shire	0 50	0 50
Percheron	0 50	0 50
Thoroughbred	1 00	2 00
Belgian Draft	0 50	0 50
French-Canadian	0 25	0 50
Canadian Pony Society	0 50	0 50
French Coach	0 50	0 50
Suffolk	0 50	0 50
Standard Bred	0 50	1 00

The reason that horses to be enrolled as pure-breds must be recorded in the name of the owner is to ensure the owners of mares that the certificate of service furnished by the stallion owner will be accepted by the Canadian National Live Stock Records at Ottawa when the owner of the mare makes application to register the progeny.

CANADIAN NATIONAL LIVE STOCK RECORDS

CLYDESDALE HORSE ASSOCIATION OF CANADA.

Incorporated under the Act respecting Live Stock Record Associations at the Department of Agriculture, Ottawa, Canada.

APPLICATION FOR TRANSFER OF OWNERSHIP

I HEREBY CERTIFY, that on the................day of................191....

I sold to .... P.O. ....

County..........Province..........the following described CLYDESDALE

Name of Animal ....Stud Book No. [..........]

I HEREBY AUTHORIZE the Transfer of Ownership as above on the Records of The Clydesdale Horse Association of Canada.

Date of Delivery ....Signature of Seller........................

In case of death Legal Representative must sign.

N.B.—This application must be filled out in ink and at once forwarded, with necessary remittance, together with Certificate of Registration, to the Accountant, Canadian National Live Stock Records, Ottawa, Canada.

SAMPLE OF REGISTRATION CERTIFICATE ISSUED BY THE CANADIAN NATIONAL RECORDS.

CANADIAN NATIONAL LIVE STOCK RECORDS

CLYDESDALE HORSE ASSOCIATION OF CANADA

Incorporated under the Act respecting Live Stock Record Associations at the Department of Agriculture, Ottawa, Canada.

Certified Copy of Pedigree Recorded in the Clydesdale Stud Book of Canada

If a change of ownership occurs, this certificate with application for transfer and transfer fee should immediately be forwarded to Record Office.

MACQUEEN (imp) [462] (5200)

Bay, white hind legs, grey fore legs, white on face; foaled 15th May 1885. Bred by Peter Kerr, Bellamack, Castle Douglas, Scotland, imported 1886 by and property of Graham Bros., Claremont, Ont.

(See other side for transfer to next owner.)

SIRE Macgregor (1487)
- SIRE OF SIRE Darnley (222)
- DAM OF SIRE

DAM Bet of Bellamack (5506)
- SIRE OF DAM Lothian Tam (1211)
- DAM OF DAM

THIS IS TO CERTIFY that the above pedigree is on record in volume Approved Typed by

For Minister of Agriculture. Registrar.

OTTAWA, CANADA.

......

This slip, when presented with and attached to the certificate, will be authority for the agent of the railway company to waybill at the reduced rates agreed to with the Dominion Department of Agriculture. This slip must be detached from the certificate by the agent and forwarded with the waybill.

CLYDESDALE R. R. SHIPPING VOUCHER No. 3.

Age................

Name of Animal......................Certificate No............

Signature of Shipper.................... P.O................

THE FOLLOWING DIAGRAM WILL GIVE THE PROPORTION OF IMPROVED BLOOD BY THE USING OF PURE-BRED SIRES OF THE SAME BREED ON COMMON FOUNDATION STOCK.

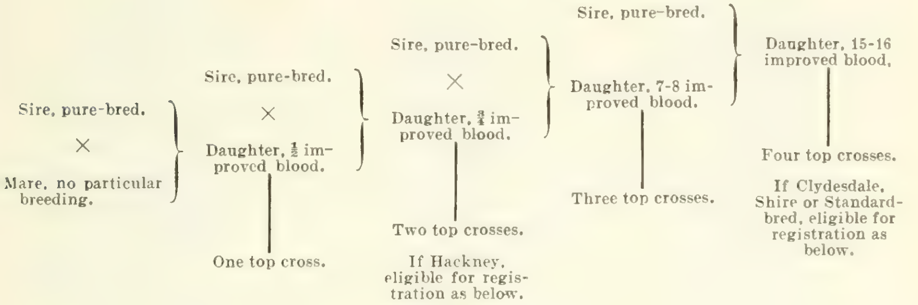

Sire, pure-bred.
×
Mare, no particular breeding.
Sire, pure-bred.
×
Daughter, ½ improved blood.
One top cross.
Sire, pure-bred.
×
Daughter, ¾ improved blood.
Two top crosses.
If Hackney, eligible for registration as below.
Sire, pure-bred.
Daughter, 7-8 improved blood.
Three top crosses.
Daughter, 15-16 improved blood,
Four top crosses.
If Clydesdale, Shire or Standard-bred, eligible for registration as below.

Table Showing the Possibility of Registration by Grading Up.

Breed.	*Registration Requirements for Canadian National Records.*
Clydesdale	Female with four top crosses by sires recorded in the Clydesdale Stud Book of Canada.
Shire	Female with four top crosses by sires recorded in the Shire Stud Book of Canada.
Hackney	Female with two top crosses by sires recorded in the Canadian Hackney Stud Book.
Standard Bred	Female with four top crosses by sires recorded in the Canadian Standard Bred Stud Book.
Percheron French Coach Belgian Draft Thoroughbred Suffolk	Do not admit of grading up.

Even when using stallions of a breed that does not permit of grading up for registration purposes, the right policy for the breeder to pursue is to use the best pure-bred sire of his chosen breed generation after generation, and, even if they cannot be recorded as pure-breds, his animals will reach that perfection of form and quality which will ensure the highest market price and yield that satisfaction which comes to all those who do their share towards improving the live stock of the country.

BELOW IS GIVEN, LIST OF STALLIONS WHICH HAVE RECEIVED PREMIUM CERTIFICATES FOR THE YEAR 1919.

Name of Horse.	Record No.	Breed.
Miroton (imp.)	4444	Percheron.
Prince Palatine (imp.)	15907	Clydesdale.
Baron's Luck (imp.)	5546	Clydesdale.
Bonnie Solway (imp.)	15293	Clydesdale.
Juvenil (imp.)	3055	Percheron.
Knight of Maryfield (imp.)	7760	Clydesdale.
Tressilian (imp.)	16332	Clydesdale.
Great Eastern	15162	Clydesdale.
Royal Design	17286	Clydesdale.
Village Swain (imp.)	15167	Clydesdale.
Everard (imp.)	16333	Clydesdale.

BELOW IS GIVEN, LIST OF STALLIONS WHICH HAVE RECEIVED PREMIUM CERTIFCATES FOR THE YEAR 1919.—*Continued.*

Name of Horse.	Record No.	Breed.
Aurelian (imp.)	18325	Clydesdale.
Blaiket Blend	15197	Clydesdale.
Horizon (imp.)	16341	Clydesdale.
Ravenscraig (imp.)	16860	Clydesdale.
Baron Minto	13980	Clydesdale.
Dunnottar	13906	Clydesdale.
Bricanam	6565	Percheron.
Locksley	15239	Clydesdale.
Pacific (imp.)	13173	Clydesdale.
Bonaday	1478	Standard Bred.
King Junior	1068	Shire.
Hurleur (imp.)	1599	Percheron.
Gold Heels	1607	Standard Bred.
Dunure Lucky Star	15379	Clydesdale.
Norfolk Performer	131	Hackney.
Ike Medium	1070	Standard Bred.
Elmer Dickson	2295	Standard Bred.
Dandy	5542	Percheron.
Lord Gray	12390	Clydesdale.
Isly (imp.)	3066	Percheron.
Solidity	18367	Clydesdale.
Joe Gleam	16716	Clydesdale.
Dunure Captain	14126	Clydesdale.
Tom McNab	9800	Clydesdale.
Loyal Hero (imp.)	9715	Clydesdale.
Belle Boy (imp.)	8524	Clydesdale.
Scottish Moncrieffe	14169	Clydesdale.
McGregor Buchlyvie	20605	Clydesdale.
Sir Simon Romeo	16919	Clydesdale.
Lord Lochinvar	18741	Clydesdale.
Adbolton Premier	840	Hackney.
Ryecroft Model	12379	Clydesdale.
Cumberland's Glory	15788	Clydesdale.
Black Gregor (imp.)	19658	Clydesdale.
Dalziel (imp.)	10626	Clydesdale.
Green's Favorite	19656	Clydesdale.
Sir James of Alton	17283	Clydesdale.
Pearl Prince	19657	Clydesdale.
Baron's Court	18366	Clydesdale.
Baron Alton	15295	Clydesdale.
Golden Taylor	18590	Clydesdale.
Jabot	3139	Percheron.
Commodore	9596	Clydesdale.
Boulder Grange Du Fosteau	886	Belgian Draft.
Nigby Boy	8285	Percheron.
Monogram	8304	Percheron.
Baron Temple	16342	Clydesdale.
Dunure David	13674	Clydesdale.
Northern Light	13909	Clydesdale.
Jeannin (imp.)	3074	Percheron.
Nard (imp.)	6382	Percheron.
King Thomas	9254	Clydesdale.
Kodi (imp.)	4462	Percheron.
King of the Saxons (imp.)	13760	Clydesdale.
Coveney Marmion	329	Hackney.
Craigie Baronet	17599	Clydesdale.
British Hero	20573	Clydesdale.
Riverbank	17954	Clydesdale.
Harvest Reaper	2533	Standard Bred.
Croton Forest King	1222	Shire.
Dunure Gulf Stream	16859	Clydesdale.
Lambton (imp.)	15299	Clydesdale.
Crown King	18915	Clydesdale.
King's Heather	14049	Clydesdale.
Peter Range	2226	Standard Bred.

BELOW IS GIVEN, LIST OF STALLIONS WHICH HAVE RECEIVED PREMIUM CERTIFICATES FOR THE YEAR 1919.—*Continued.*

Name of Horse.	Record No.	Breed.
Kent Favourite	16472	Clydesdale.
Lassis (imp.)	3920	Percheron.
Athol King	9178	Clydesdale.
Knockinlaw Revolt	15482	Clydesdale.
Gay Ronald	15342	Clydesdale.
Lenoir	4443	Percheron.
Touchstone	13846	Clydesdale.
Mouchoir	4725	Percheron.
Billy Bingen	2182	Standard Bred.
Pride of Glencairn	10377	Clydesdale.
King's Champion	13174	Clydesdale.
Baron Senwick	16408	Clydesdale.
Spartan	509	Hackney.
Voltaire	8302	Percheron.
Bright Guard (imp.)	13410	Clydesdale.
Gartly Forever (imp.)	8412	Clydesdale.

LIST OF HORSES FOR WHICH THE REGULAR ENROLMENT CERTIFICATE HAS NOT BEEN ISSUED

HORSES FOR WHICH INTERIM CERTIFICATES HAVE BEEN ISSUED.

Fyle.	Name of Horse.	Name of Owner.	Address.
X-5708	Calva	Alex. McQuatt	Woodlawn.
X-3748	Homestake King	Jas. D. Hamilton	Sutton.
X-3629	Chimes Axworthy	Wm. Johnston	Galt.
X-6090	Scotchman	John Smith	Dryden.
X-2136	Bright Stone	Ed. Simpson	Clandeboye.
X-6096	Chester	A. Sequin	Warren.
X-6101	Abbot of Riverside	Sandy Matchett	Peterboro.
X-3539	The Miracle	J. E. Bowles	Meaford.
X-3810	Main General	John T. Petch	Linwood.
X-4089	Lord Powis 2nd	Henry West	Sarnia (R.R. 3).
X-5919	Brutus	Chas. White	St. Thomas (R.R. 3).
X-6048	Prince Darnley	M. D. McCormack	Shedden (R.R. 2).
X-x235	Aberlady 2nd	Brown Bros.	Wolfe Island.
X-1299	Bob Hampton	Gordon Gould	Merlin.
X-1388	Lord Kinnoul	Neil Maitland	Sarnia (R.R. 2).
X-1913	Royal Jimmie	Albert Thompson	Holyrood.
X-2243	Van Birr	Chas. Case	Tilbury.
X-3282	Oradell	C. H. Binions	Malton.
X-3476	Jason (imp.)	Geo. Broadley	Simcoe.
X-4202	Jay Bird 2nd	John H. Powell	Winchester.
X-4932	The Great Widower	Mack Howard	Chatham.
X-5504	Thos. Atkins	J. A. McDonald	Emsdale.
X-3378	MacGordon	Paul Daoust	Monteville.
X-5887	Dunure Star	Andrew Filsinger	Ayton.
X-6053	Stirling Prince	Fred Symington	Camlachie.

LIST OF HORSES WHERE NO CERTIFICATE OF ANY KIND HAS BEEN ISSUED BUT THE HORSES HAVE BEEN INSPECTED AND THE FEES PAID.

Fyle.	Name of Horse.	Name of Owner.	Address.
X-5809		Freeman Truax	Blenheim.
X-5852		Bert Markle	Tillsonburg.
X-5910		R. M. Foster	Granton.
X-5940		Colin McKeigan	Strathroy.
X-5941		Geo. McShea	Russell.
X-6035		Geo. Rennie	Washago.
X-6044		Geo. Troyer	Zurich.
X-6047		J. W. Smith	Merlin (R.R. 1).
X-6057		R. R. Huff	Chatham.
X-6091		Geo. Crane	Guelph (R.R. 6).

SUMMARY OF ENROLLED HORSES FOR THE YEARS 1913-1919

County	1913		1914		1915		1916		1917		1918		1919
	Enrolled Horses.	Grades.	Enrolled Horses.	Grades.	Enrolled Horses.	Grades.	Enrolled Horses.	Grades.	Enrolled Horses.	Grades.	Enrolled Horses.	Grades.	Enrolled Horses.
Brant	28	11	44	16	43	15	35	11	41	10	27	6	14
Bruce	103	35	114	41	99	28	91	30	95	21	93	17	76
Carleton........	65	31	76	30	70	21	54	15	60	17	52	13	51
Dufferin........	51	11	58	11	57	12	51	11	48	6	46	5	48
Dundas..........	44	19	41	22	43	18	38	16	29	10	16	3	13
Durham	60	18	63	14	67	14	52	8	43	3	42	1	37
Elgin...........	65	32	75	31	76	22	46	9	50	11	36	3	36
Essex	69	29	91	30	94	29	76	26	61	12	40	8	29
Frontenac	31	19	42	25	42	27	38	22	35	19	23	9	16
Glengarry	34	14	48	23	54	24	48	16	43	13	29	10	27
Grenville.......	37	21	32	16	28	13	21	8	21	9	20	8	14
Grey	108	25	121	29	118	26	94	19	87	14	79	11	67
Haldimand......	47	24	50	21	54	20	50	16	38	13	32	9	32
Halton	27	7	29	6	25	5	32	8	30	5	23	7	15
Hastings	82	61	87	59	72	41	65	34	59	23	50	16	32
Huron	112	31	142	41	130	29	123	30	114	26	99	14	83
Kent	130	40	136	34	133	34	122	36	89	20	69	13	61
Lambton.........	113	25	134	40	126	29	108	24	88	16	71	12	71
Lanark	58	22	76	31	71	21	61	20	56	19	44	12	42
Leeds	50	32	52	31	40	23	25	13	25	12	19	6	21
Lennox & Add...	45	30	42	22	33	14	29	10	29	14	24	12	13
Lincoln.........	27	14	33	14	31	16	15	7	16	4	16	4	10
Middlesex	128	36	158	43	154	39	142	32	112	18	73	7	68
Norfolk.........	57	18	60	20	53	16	40	15	39	17	24	8	22
Northumberland	50	20	51	16	48	18	53	17	43	12	28	5	31
Ontario.........	101	16	108	21	124	25	96	12	95	12	80	5	77
Oxford	77	25	86	27	90	24	77	18	57	15	36	4	35
Peel............	52	9	72	8	70	8	65	6	47	4	46	3	42
Perth	81	16	102	21	105	24	86	14	67	10	71	7	74
Peterboro.......	46	22	46	22	52	24	44	20	50	16	32	9	34
Prescott........	46	34	57	39	42	29	37	25	27	14	20	9	8
Prince Edward..	29	17	27	13	36	18	26	15	28	9	19	8	15
Renfrew	85	35	91	42	78	33	55	26	62	28	53	23	45
Russell.........	39	18	52	32	38	24	33	20	34	17	26	10	18
Simcoe	139	41	157	52	145	47	120	32	100	23	82	19	74
Stormont	32	18	35	18	27	14	23	14	23	16	20	11	11
Victoria	48	15	66	23	62	23	70	22	68	15	53	14	37
Waterloo	48	13	59	22	54	15	47	11	45	10	43	9	44
Welland........	17	7	28	16	28	12	26	9	22	6	14	3	12
Wellington......	104	26	117	27	115	30	87	17	82	16	68	16	58
Wentworth ....,	50	25	60	27	56	17	35	9	30	10	22	4	18
York	119	25	148	29	157	27	135	20	121	16	101	13	110
New Ontario....	12	3	16	5	120	67	129	75	110	57	127	72	73
Outside points ..	14	3	19	8	17	7	21	8	14	2	5	...	15
Totals..........	2,760	993	3,201	1,118	3,177	1,022	2,731	826	2,433	640	1,993	458	1,729
Percentage of Grades.....	36 %		34½ %		32 %		30 %		26 %		23 %		0 %

SUMMARY FOR THE PROVINCE OF ONTARIO SHOWING BY COUNTIES THE NUMBER OF THE DIFFERENT BREEDS OF STALLIONS ENROLLED DURING 1919.

County.	Clydesdales.	Percherons.	Shire.	Belgian Draft.	French Can.	Suffolk.	Standard Bred.	Thoroughbred.	Hackney.	French Coach.	German Coach.	Ponies, Morgans and Hunter.	Total Horses Enrolled.
Brant	3	6	....	1	....	1	1	....	2	....	....	....	14
Bruce	50	10	1	3	1	....	10	1	....	....	....	....	76
Carleton	31	3	....	2	1	....	12	....	2	....	....	....	51
Dufferin	41	2	....	....	....	....	4	....	1	....	....	....	48
Dundas	7	3	....	....	....	....	2	....	1	....	....	....	13
Durham	25	1	1	....	....	1	4	....	3	....	1	1	37
Elgin	15	10	4	1	....	1	3	....	1	....	1	....	36
Essex	13	10	1	2	....	....	3	....	....	....	....	....	29
Frontenac	3	5	....	....	....	....	8	....	....	....	....	....	16
Glengarry	14	7	....	....	....	....	2	1	3	....	....	....	27
Grenville	7	1	1	....	....	....	5	....	....	....	....	....	14
Grey	51	5	....	1	....	....	9	....	1	....	....	....	67
Haldimand	16	7	1	....	....	....	6	....	2	....	....	....	32
Halton	4	6	1	....	1	....	1	2	....	....	....	....	15
Hastings	13	2	....	1	....	....	15	....	1	....	....	....	32
Huron	49	11	1	....	....	....	21	....	1	....	....	....	83
Kent	22	21	3	....	....	....	14	....	....	....	....	1	61
Lambton	38	14	4	....	....	....	15	....	....	....	....	....	71
Lanark	26	4	2	1	....	....	6	....	3	....	....	....	42
Leeds	7	5	1	....	....	....	8	....	....	....	....	....	21
Lennox and Addington	6	7	....	....	....	....	....	....	....	....	....	....	13
Lincoln	4	2	....	....	....	....	4	....	....	....	....	....	10
Middlesex	32	17	....	4	....	....	12	....	1	....	1	1	68
Norfolk	7	11	....	....	....	....	1	....	2	....	1	....	22
Northumberland	16	7	....	....	....	....	6	2	....	....	....	....	31
Ontario	60	7	2	....	....	....	6	....	2	....	....	....	77
Oxford	19	10	....	....	....	....	5	....	1	....	....	....	35
Peel	25	5	1	....	....	....	8	2	1	....	....	....	42
Perth	47	7	....	....	....	....	18	1	1	....	....	....	74
Peterboro'	20	9	....	....	....	....	3	....	2	....	....	....	34
Prescott	5	3	....	....	....	....	....	....	....	....	....	....	8
Prince Edward	4	8	....	....	....	....	3	....	....	....	....	....	15
Renfrew	25	11	1	1	1	....	5	....	1	....	....	....	45
Russell	9	6	....	1	....	....	2	....	....	....	....	....	18
Simcoe	46	16	2	....	....	....	8	....	2	....	....	....	74
Stormont	6	2	....	....	....	....	3	....	....	....	....	....	11
Victoria	31	3	....	....	....	....	2	....	1	....	....	....	37
Waterloo	23	6	....	....	....	....	10	1	3	....	1	....	44
Welland	1	4	1	1	....	....	5	....	....	....	....	....	12
Wellington	41	7	....	....	....	....	5	2	2	....	....	1	58
Wentworth	7	4	....	1	....	....	5	1	....	....	....	....	18
York	66	17	3	1	....	....	12	5	5	1	....	....	110
New Ontario	33	21	1	....	2	....	12	....	2	1	1	....	73
Outside Points	8	3	....	....	....	....	2	1	....	....	....	1	15
	976	326	32	21	6	3	286	19	47	2	6	5	1,729

ENROLMENT BY COUNTIES

BREEDS:	Clydesdale,	Hackney,	Suffolk,	Morgan,	Shire,	Percheron,	Thoroughbred,	Belgian Draft,	French Coach,	French-Canadian,	Standard Bred,	German Coach
ABBREVIATIONS:	Clyde.	Hack.	Suff.	Morg.		Per.	Thor.	Bel. Dr.	Fr. Ch.	Fr. Can.	St. Br.	Gr. Ch.

BRANT COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Jauze (imp.)	3833	3841	Per.	4396	1909	N. Dyment	Brantford	F. 1916	1
Nutgrove Chieftain	19270	5210	Clyde.	5746	1915	E. R. Langs	Brantford	S. 1918	1*
Cholderton Prime Minister (imp.)	76	2801	Suff.	3313	1911	W. J. Roddick	Brantford	F. 1918	1
Brant Glory	5524	5003	Per.	5487	1915	J. S. Bawthinhimer & Sons.	Cainsville	F. 1917	1*
Kairouan (imp.)	3819	2953	Per.	3505	1910	Daniel House & J. W. Myers.	Middleport	S. 1919	1
Prince Erskine of Woodroffe	5246	538	Clyde.	1332	1904	Thos. Matthews	Middleport	S. 1914	1
Warwick	615	4432	Hack.	4803	1909	Morgan E. Harris	Mohawk	S. 1916	1
Adbolton Premier	840	4717	Hack.	5145	1915	Wm. Carnegie	Paris	F. 1918	A1
Boulder Grange Du Fosteau	886	4960	Bel. Dr.	5408	1915	C. W. Gurney	Paris	F. 1918	A1
Enghien	675	395	Per.	381	1904	C. W. Gurney	Paris	F. 1912	1
Islam (imp.)	3031	1358	Per.	618	1908	Haas Brothers	Paris	S. 1915	1
Junior (imp.)	3824	2847	Per.	3399	1909	Haas Brothers	Paris	S. 1916	1
High Private	747	2933	St. Br.	3453	1907	Clemons Brothers	St. George	F. 1914	1
Baron's Charm (imp.)	9238	90	Clyde.	683	1903	J. J. Foran	St. George	F. 1912	1

BRUCE COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Duke of Connaught	17129	5300	Clyde.	5536	1915	William Askin	Allenford	F. 1917	1*
Richardson Model	20526	5478	Clyde.	6064	1917	Archie Crow	Allenford	S. 1919	1
Favori (imp.)	8490	2246	Per.	1873	1901	Henry Collins	Armow	F. 1914	1
Baron Royal (imp.)	3981	329	Clyde.	215	1900	Samuel McCombs	Bervie	F. 1912	1
Racipault (imp.)	3124	1066	Per.	597	1902	John Bechberger	Cargill (R.R. 1)	F. 1912	1
Cumberland's Glory (imp.)	15788	3614	Clyde.	3970	1911	Jas. D. Campbell	Cargill	F. 1918	A1
Match All	16932	5262	Clyde.	5165	1914	Cargill, Limited	Cargill	F. 1918	1
Ryecroft Model	12379	3376	Clyde.	3845	1910	Cargill, Limited	Cargill	F. 1918	A1
Sylvi (imp.)	1350	319	Per.	128	1903	George Bechburger	Chepstow	F. 1912	1
Royal Purse (imp.)	11857	91	Clyde.	686	1908	Walter Agnew	Chesley	F. 1917	A1
Levi Baron	21185	5422	Clyde.	5967	1917	Adam Miller	Chesley (R.R. 4)	S. 1919	1
Mistletoe Mac	14501	3886	Clyde.	4158	1912	James Vancise	Chesley	F. 1918	1
Silver Cloud (imp.)	8797	138	Clyde.	718	1905	Thomas Ferris	Dobbington	F. 1914	1

Full Fledge (imp.)	15304	5103	Clyde.	4626	1911	August Mannerow	Dobbington (R.R. 2)	S.	1918	1
Undefeatable	19304	5340	Clyde.	5968	1916	Robert Perdue	Eden Grove	S.	1919	1
Lord Lowther (imp.)	8895	3328	Clyde.	3800	1900	Daniel McNichol	Elmwood	F.	1914	1
Winsome King	11478	3327	Clyde.	114	1908	Daniel McNichol	Elmwood	F.	1916	1
Knottingley Baronet (imp.)	988	647	Shire	687	1905	Manno Rody	Elmwood	F.	1914	1
Sir Brant	17253	4979	Clyde.	5420	1915	David Willoughby	Elmwood	F.	1918	1
Augustus	1095	4905	Bel. Dr.	5447	1914	Michael Graf	Formosa	F.	1918	1
Lord Ascot (imp.)	8669	2078	Clyde.	2758	1906	L. N. McLean	Glamis	S.	1915	1
Prince of Kirkside (imp.)	5883	12	Clyde.	244	1899	Anthony Symon	Glamis	F.	1912	1
Gartly Baron	14625	1319	Clyde.	1879	1911	Andrew Good	Greenock	F.	1918	1
Aurorin (imp.)	1923	5332	Bel. Dr.	5983	1912	Levi Good	Greenock	S.	1919	1
Baron Hood (imp.)	8489	45	Clyde.	112	1900	Levi Good	Greenock	F.	1912	1
Chlordyne (imp.)	13547	353	Clyde.	335	1906	Levi Good	Greenock	F.	1914	1
Ichnobate (imp.)	3858	2875	Per.	3387	1908	Levi Good	Greenock	S.	1916	1
Kossuth (imp.)	3003	1160	Per.	1630	1910	Levi Good	Greenock	S.	1918	A1
Captain McKinney	1403	3473	St. Br.	105	1895	Charles Sewers	Greenock	F.	1912	1
King Brice	1683	3958	St. Br.	4163	1911	Charles Sewers	Greenock	F.	1918	1
King's Selection	17780	4841	Clyde.	5399	1915	John T. Carruthers	Holyrood	F.	1918	1
Diplomatist (imp.)	15278	3192	Clyde.	3632	1908	Charles Creech	Kincardine	S.	1917	1
General Cormier	4372	4654	Per.	5035	1914	Ben. Elliott	Kincardine	S.	1918	1*
Don Roma	2393	4871	St. Br.	5395	1900	Jas. Kirkpatrick and Wm. Graham	Kincardine	S.	1917	1
Baron Byron (imp.)	7744	677	Clyde.	104	1903	Richard Needham	Kincardine (R.R. 2)	F.	1912	1
Buchlyvie Mhor (imp.)	11300	2253	Clyde.	1710	1909	R. Robinson & Co.	Kincardine	F.	1916	1
O. U. McKinney	1404	4542	St. Br.	4755	1913	Jos. Shelton	Kincardine	S.	1918	1*
Prince of Palmerston	14925	2549	Clyde.	3234	1910	Smith Brothers	Lion's Head	F.	1918	1
Puri	1027	2165	St. Br.	1613	1901	Norman N. Smith	Lion's Head	S.	1913	1
Annandale (imp.)	7150	1055	Clyde.	860	1904	Albert Swanson	Lion's Head	F.	1912	1
Bay King Traveller	1351	3171	St. Br.	3700	1906	W. E. Henderson	Lucknow	F.	1914	1
Prince Carruchan 3rd	20400	5236	Clyde.	5806	1917	Wm. R. Martin	Lucknow (R.R. 3)	F.	1918	1
Cherry Worthy	1230	4614	St. Br.	4168	1910	Albert Millson	Lucknow	S.	1918	1
Promoter (imp.)	16335	3876	Clyde.	4256	1909	Kenneth Farrish	Lucknow (R.R. 7)	S.	1917	1
Our Choice	14696	822	Clyde.	1905	1910	Stuart E. Robertson	Lucknow	F.	1918	1
Max	909	4204	Bel. Dr.	4681	1913	Anthony Strause	Mildmay	F.	1918	1
Fyvie Peer (imp.)	16338	3874	Clyde.	4253	1912	W. S. Airth	North Bruce	F.	1918	1
Heather Jock	458	1912	Thor.	2235	1901	William Rowand	Paisley	S.	1915	2
Coronation	12339	2408	Clyde.	3130	1910	Duncan Stewart	Paisley	S.	1917	1
Gay Boy	21590	5443	Clyde.	6067	1914	Stephen Winch	Paisley	S.	1919	1
Military Crest	18126	4643	Clyde.	5063	1913	Stephen Winch	Paisley	S.	1919	1
Miroton (imp.)	4444	3713	Per.	4246	1912	R. W. Garland	Pinkerton	F.	1918	A1
Fascinator (imp.)	13912	1147	Clyde.	2087	1910	W. J. Wilson	Pinkerton (R.R. 1)	F.	1918	1

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BRUCE COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Malitor (imp.)	3849	3711	Per.	4247	1912	John W. Hopper	Port Elgin	F. 1918	1
Symmetry	21492	5361	Clyde.	5966	1916	Duncan McRae	Port Elgin	S. 1919	1
Gallant Carruchan (imp.)	8853	1535	Clyde.	1216	1902	David Campbell	Ripley	F. 1912	1
Spruce Hill	14202	3854	Clyde.	4446	1912	Jas. A. Harris	Ripley	S. 1919	1
Lord Saxtony	2504	5043	St. Br.	5550	1907	W. W. Irwin	Ripley	S. 1918	1
Captain Carruchan	20360	5347	Clyde.	5805	1917	Wm. J. Johnston	Ripley (R.R. 1)	F. 1918	1
Slap Bang (imp.)	13935	351	Clyde.	333	1910	Malcolm Matheson	Ripley	F. 1918	1
Popinjay (imp.)	11984	575	Clyde.	218	1909	Robt. McTavish & Wylie	Ripley (R.R. 1)	F. 1916	1
Drumburle Again	16395	4104	Clyde.	4078	1913	Morgan & Cuthbertson	Ripley	F. 1918	1
Maple Crest Mine	11524	9	Clyde.	209	1910	Andrew Gammie	Tara	S. 1917	1
Pride of Arran	10212	11	Clyde.	208	1909	Andrew Gammie	Tara	S. 1917	1
Baron's Luck (imp.)	5546	2711	Clyde.	3209	1904	George Henderson	Tara	F. 1918	A1
Mograzia	155	2689	St. Br.	518	1903	James Herron	Tara (R.R. 5)	F. 1914	1
Craigisla's Favourite	14286	4642	Clyde.	5020	1912	James Kenny	Teeswater	F. 1917	1*
Baron Mark	20598	5255	Clyde.	5804	1916	Kenneth McKenzie	Teeswater	F. 1918	1
Prince Mark (imp.)	13370	676	Clyde.	103	1909	Wm. G. Moffat	Teeswater (R.R. 3)	F. 1916	1
King Darrel	12906	3797	Clyde.	4311	1911	Hugh McDougall	Tiverton	F. 1918	1
K. McGregor	2294	4872	St. Br.	5401	1912	Thos. G. Scott	Tiverton	F. 1918	1
Pacific Canadian	1474	4711	Fr. Can.	5244	1913	Henry Ernst	Walkerton	F. 1918	1
Lorraine (imp.)	4440	3702	Per.	4243	1911	A. G. Fortune	Walkerton	F. 1918	1
Cerdic King (imp.)	16340	3873	Clyde.	4251	1913	Daniel McNicol	Walkerton	S. 1919	1
Heron (imp.)	1594	417	Per.	688	1907	John Speirs	Wiarton	F. 1914	1

CARLETON COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Baron Parkhead	16467	5072	Clyde.	5515	1914	John F. Herrick	Arnprior	F. 1917	1*
Joncy (imp.)	3035	2786	Per.	611	1909	Andrew Armstrong	Carp	F. 1916	1
Scottish Hero (imp.)	9251	3283	Clyde.	624	1904	C. Armstrong & Sons	Carp	F. 1912	1
Solon (imp.)	15426	4537	Clyde.	4984	1910	E. H. Graham & Son	Carp	F. 1917	A1
Captain Larabie	1510	3636	St. Br.	3737	1904	W. J. Wilson	Carp	F. 1914	1
Royal Montrose	8517	1657	Clyde.	2562	1905	W. J. Wilson	Carp	S. 1914	1
Lavis (imp.)	3897	2871	Per.	3298	1911	J. H. Skuce	Carsonby	F. 1917	A1*
Baron Rowena 2nd	15255	4426	Clyde.	4748	1913	J. H. Kennedy & Son	Corkery	F. 1917	1*
Golden West	482	4889	Hack.	5445	1908	J. H. Kennedy & Son	Corkery	S. 1917	1
Craigie's Heir	17997	5249	Clyde.	5899	1915	Adam Scharfe	Cumming's Bridge	S. 1919	A1
MacGregor Buchlyvie (imp.)	20605	5248	Clyde.	5895	1912	Adam Scharfe	Cumming's Bridge	S. 1919	A1
Sir William Torrance	15572	4138	Clyde.	4610	1913	Horace C. Pinhey	Dunrobin	F. 1918	1
Baron Fitzroy	18665	5402	Clyde.	6041	1916	A. W. Miller & Sons	Galetta	S. 1919	1

Baron Junior	17503	5401	Clyde.	6040	1915	A. W. Miller & Sons	Galetta	S.	1919	1
Harvest Reaper	2533	5058	St. Br.	5590	1912	W. P. Hurdman	Hurdman's Bridge	S.	1918	A1*
Waldron	2688	5356	St. Br.	5780	1908	W. P. Hurdman	Hurdman's Bridge	S.	1919	1
Borden 2nd	13013	1879	Clyde.	2705	1911	John Bidgood	Kinburn	F.	1918	2
Carnegie 2nd	11143	3167	Clyde.	3639	1908	John Bidgood	Kinburn	S.	1918	2
Roy Harbour	20456	5199	Clyde.	5673	1916	T. A. Hicks	Kinburn	S.	1918	1*
Bayard De Corroy (imp.)	72	3283	Bel. Dr.	1296	1897	Andrew Spratt	Leitrim (R.R. 1)	F.	1912	1
Blondin De Rouveroy	660	3221	Bel. Dr.	3615	1910	Thos. Costello	Manotick	F.	1917	A1
Whitney	13012	4496	Clyde.	4837	1911	Jas. Callander	North Gower	S.	1919	1
Hapathique (imp.)	1518	686	Per.	869	1907	G. E. Lewis	North Gower	F.	1917	A1
Baron Flashknot	15530	4146	Clyde.	4186	1913	Jas. MacKay	North Gower	F.	1918	1
The Trip	2529	5023	St. Br.	5565	1908	Antoine Leduc	Orleans	S.	1918	1
Pride of Dalmeny	1145	4737	St. Br.	5243	1910	Edward P. Dewan	Osgoode Sta.	S.	1919	2
Benedictine (imp.)	14582	2858	Clyde.	3390	1911	Michael O'Brien	Osboode Sta.	S.	1919	1
Tifty's Pride (imp.)	13820	3322	Clyde.	1159	1909	Wm. K. Pyper	Osgoode Sta.	S.	1917	1
King Philip	15839	4588	Clyde.	4998	1911	Peter Wyatt	Osgoode Sta. (R.R. 2)	S.	1919	1
The Gleaner	683	3806	St. Br.	4178	1908	Arthur Blackburn	Ottawa	F.	1916	1
Prince Blue	1315	2932	St. Br.	3448	1912	Mrs. M. H. W. Cameron	Ottawa, 488 Lewis St.	S.	1918	A1*
Patrick Guy	2220	5405	St. Br.	6018	1916	Wm. Cundell	Ottawa, 9 Henry St.	S.	1919	1
Anmer (imp.)	874	4680	Thor.	5100	1910	Dominion Government	Ottawa	F.	1918	A1
Colonel Tipton	1314	3672	St. Br.	4146	1912	R. R. Foster	Ottawa, 99 Irving Ave.	S.	1919	1
Captain Larabie	1510	3636	St. Br.	3737	1904	M. A. Honeywell	Ottawa	F.	1914	1
Dunbar	18328	5029	Clyde.	5569	1916	B. Rothwell	Ottawa (R.R. 1)	S.	1918	1*
Dunlevie	18331	5027	Clyde.	5567	1916	B. Rothwell	Ottawa (R.R. 1)	S.	1918	1*
Hillsdale Performer	838	4813	Hack.	5330	1915	B. Rothwell	Ottawa (R.R. 1)	F.	1918	1
March Past	19994	5240	Clyde.	5798	1917	B. Rothwell	Ottawa (R.R. 1)	F.	1918	1
Silver Chief	18327	5028	Clyde.	5568	1916	B. Rothwell	Ottawa (R.R. 1)	S.	1918	1*
Sir Eustace	19993	5241	Clyde.	5797	1917	B. Rothwell	Ottawa (R.R. 1)	F.	1918	1
Royal Erskine (imp.)	13699	2848	Clyde.	3391	1911	R. W. Smiley	Ottawa	S.	1919	1
Spier Olcott	55	4682	St. Br.	2416	1910	F. A. Tracey	Ottawa	S.	1919	1
Lord Kintore (imp.)	4851	358	Clyde.	374	1906	Thos Burke	South March	S.	1915	1
Duke of Kenmore	9638	413	Clyde.	672	1909	Howard H. McCoy	Stanley's Cors.	F.	1916	1
Lord Aberdeen (imp.)	8495	5372	Clyde.	5949	1906	Hartley McKay	Stittsville	S.	1919	1
Baron Edward	21531	5407	Clyde.	6028	1912	Fred Spearman	Stittsville (R.R. 1)	S.	1919	1
Lawrentian Boy	2409	4900	St. Br.	5349	1914	R. A. Watchorn	Stittsville	F.	1918	1
Silver Band	13423	3750	Clyde.	4183	1911	Jos. Lewis	Stittsville	S.	1919	1
On Guard's Baron	16861	4424	Clyde.	4834	1914	D. J. Kennedy	Vernon	F.	1917	1*
Prince of Huntley	7741	836	Clyde.	1719	1907	S. T. Smith	Woodlawn	F.	1914	1

*Horse requires inspection; Owner should look up route of Inspectors and present stallion at his nearest Inspection point at time stated.

DUFFERIN COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Cower Chief (imp.)	13818	783	Clyde.	1141	1909	Geo. E. Wilson	Belwood	F. 1916	2
Proton Fancy	18683	5170	Clyde.	5691	1916	Alfred Colley	Corbetton	S. 1918	1*
Jim Brown	18966	5181	Clyde.	5682	1916	Duncan Corbitt	Corbetton	S. 1918	2*
Montrave Max	12804	1723	Clyde.	2489	1910	John Donkin	Corbetton (R.R. 4)	S. 1917	1
Royal Tower (imp.)	14499	2902	Clyde.	3454	1911	Ernest & Norman Ferrier	Corbetton (R.R. 4)	F. 1918	1
Montrave Baronet	17021	5002	Clyde.	5494	1914	Robt. McCutcheon	Glen Cross	F. 1917	1*
Prince Marion	15073	4374	Clyde.	4336	1911	Thos. McFadden	Glen Cross	F. 1917	2*
Dunmore Count	20692	5391	Clyde.	5813	1917	John S. Campbell	Grand Valley (R.R. 3)	F. 1918	1
Barrie MacNab	19409	5246	Clyde.	5535	1916	Geo. Clayton & Son	Grand Valley	F. 1918	1
Loyal Hero (imp.)	9715	770	Clyde.	1456	1907	Geo. Clayton & Son	Grand Valley	F. 1917	A1
Tom McNab	9800	1067	Clyde.	442	1904	William Clayton	Grand Valley	F. 1917	A1
Baron Dalmar	20419	5233	Clyde.	5807	1917	E. & H. Crewson	Grand Valley	F. 1918	1
Montrave Wilton	18009	5162	Clyde.	5652	1914	Jas. & Thos. Greenwood	Grand Valley	S. 1918	1*
Lothian McKay	17763	4764	Clyde.	5280	1914	Robt. Holborn	Grand Valley	F. 1918	1
Linton Again	18098	3260	Clyde.	3747	1910	Wm. Martin, Estate	Grand Valley	F. 1918	1
Colbeck Lad	21383	5366	Clyde.	5814	1917	Thos. H. McConnell	Grand Valley	F. 1918	1
Glendale Court (imp.)	15193	3124	Clyde.	3666	1911	S. T. & J. H. Platt	Grand Valley	F. 1918	1
Scottish Moncreiffe	14169	4506	Clyde.	4402	1912	M. C. Ward	Grand Valley	F. 1918	A1
Everest Again (imp.)	9170	1173	Clyde.	508	1906	Thos. Dunseath	Honeywood	F. 1914	1
Frank Harmony	8069	3530	Clyde.	3937	1905	David A. Keast	Jessopville	S. 1918	1
Baron Northland	17848	4943	Clyde.	5253	1915	W. F. Cooney	Laurel	F. 1918	1
Lachlan Donald	20010	5428	Clyde.	5511	1915	Jas. E. Ferris	Mansfield (R.R. 3)	F. 1917	1*
Prince of Cardow	12030	379	Clyde.	540	1909	R. J. Ormsby	Mansfield	F. 1916	1
Silver Birch (imp.)	8738	528	Clyde.	262	1905	Robert Brown	Melancthon	F. 1914	1
Baron Dufferin	18416	4783	Clyde.	5301	1914	J. B. Murdy	Melancthon	F. 1918	1
Sir Manuel (imp.)	13754	716	Clyde.	1250	1908	John Lee & Wilson Irwin	Mono Mills	F. 1916	1
Bessboro' Freeman (imp.)	9931	446	Clyde.	912	1907	R. Switzer & P. Contlen	Monticello	F. 1914	1
Flashwood Chief	18635	4758	Clyde.	5170	1914	Alexander Ward	Monticello	F. 1918	1
Alnared	225	730	St. Br.	1694	1908	John Cannawin	Orangeville	F. 1916	1
King Gartly	19184	4911	Clyde.	5448	1913	John Cannawin	Orangeville	F. 1918	1
Royal Dale (imp.)	14136	1470	Clyde.	2352	1910	John S. Graham	Orangeville	S. 1918	1
Albion (imp.)	14453	1478	Clyde.	2365	1910	J. B. McNichol	Orangeville	F. 1918	1
King Alfred	10873	396	Clyde.	1365	1910	Geo. I. Nodwell	Orangeville	F. 1918	1
Todd Bell	1695	4011	St. Br.	4376	1912	T. C. Peavoy	Orangeville	F. 1918	2
Scottish Gem (imp.)	12560	1630	Clyde.	2468	1909	John Suggutt	Orangeville	F. 1917	A1
Kirminnock Mac (imp.)	12122	1933	Clyde.	657	1908	Nathaniel Thompson	Orangeville	F. 1916	1
Eden	381	5169	St. Br.	5683	1910	Peter Wilson	Orangeville	S. 1918	1
Montrave Viceroy	12805	1487	Clyde.	533	1910	Jas. R. Gibson	Orton	F. 1918	1

Dunure Hallmark (imp.)	15378	2914	Clyde.	3484	1911	Jas. Duncan	Orton	F. 1918	1
Canadian Boy	20910	5237	Clyde.	5812	1916	Nelson Teeter	Riverview (R.R. 1)	F. 1918	1
Jim Direct	1707	4148	St. Br.	4118	1912	Geo. Fletcher	Rosemont	F. 1918	1
Jeannin (imp.)	3074	3248	Per.	3741	1909	Wm. Thompson	Rosemont	S. 1919	A1
Northern Light (imp.)	13909	803	Clyde.	1825	1909	Wm. Thompson	Rosemont	S. 1919	A1
Harfang (imp.)	3193	2065	Per.	2639	1907	Jas. H. Bell	Shelburne	F. 1914	1
Great Times	15407	4377	Clyde.	4750	1913	John J. Hammond	Shelburne	F. 1917	1*
Pride of Amaranth	14791	1170	Clyde.	916	1910	John J. Hammond	Shelburne	S. 1919	2
Tissington Playmate (imp.)	289	5115	Hack.	2119	1904	John Mowat	Shelburne	S. 1918	1
Baron Again	12836	2508	Clyde.	3170	1911	Wm. Ritchie	Shelburne	F. 1918	1

DUNDAS COUNTY.

Outlaw (imp.)	602	386	Hack.	794	1909	Henry Hanson	Brinston (R.R. 2)	F. 1916	1
A Night Rider	1346	3788	St. Br.	4319	1907	T. J. Ellis	Chesterville	S. 1915	1
Laddie Guard	18625	5022	Clyde.	5514	1915	Alex. B. McConnell	Chesterville (R.R. 3)	F. 1917	1*
Richorn Prince (imp.)	11791	2813	Clyde.	3348	1908	Norman G. Moodie	Chesterville	F. 1916	1
Scottish Ring (imp.)	13852	4625	Clyde.	5068	1910	Calvin M. Munro	Chesterville	F. 1917	1
Prince Russell	17208	4695	Clyde.	5230	1914	Chas. Hanson	Dixon's Cors.	F. 1918	1
Sir James P. Whitney	19173	4874	Clyde.	4209	1913	Ira Ennis	Inkerman	F. 1918	1
Lord Curzon (imp.)	5334	707	Clyde.	1087	1902	Reuben Merkley	Iroquois	F. 1912	1
Herculoid	3108	37[illegible]	Per.	4222	1912	J. A. McLeod	Morewood	F. 1918	1
Mainbow	2805	5303	St. Br.	5923	1916	Frank Parker	Winchester	S. 1919	1
Duke of Dundas	19780	5305	Clyde.	5958	1916	John D. Benton	Williamsburg	S. 1919	2
French Sport	5760	5358	Per.	5903	1916	I. J. Pitt	Williamsburg	S. 1919	1
Hantan (imp.)	1521	429	Per.	796	1907	Williamsburg Percheron Horse Ass'n.	Williamsburg	F 1914	1

DURHAM COUNTY.

Derwent Pride	15957	4457	Clyde.	4867	1913	F. H. Ward	Bethany	F. 1917	1*
Royal Derwent	18677	4784	Clyde.	5303	1914	F. H. Ward	Bethany	F. 1918	1
Antevolo Rysdyk	51	15[illegible]	St. Br.	2103	1910	S. A. Devitt	Blackstock	F. 1918	1
Montrave Imperialist (imp.)	12646	649	Clyde.	720	1908	R. M. Cale	Bowmanville	F. 1916	2
Paramont Regent	1476	5316	Shire	5954	1910	D. P. Cowan	Bowmanville	S. 1919	1
King's Lynn (imp.)	10743	2280	Clyde.	2220	1904	Chester Power	Bowmanville	F. 1914	1
Mainspring	721	2821	Hack.	3352	1911	Robt. Beith	Bowmanville	F. 1918	1
Baron Polwarth (imp.)	11298	365	Clyde.	435	1908	W. J. Tabb	Bowmanville (R.R. 6)	F. 1916	2
Lewis MacInnes	4447	1959	Clyde.	2107	1903	Thos. Hyland	Burketon	S. 1913	1
King of Woodslee	17855	5086	Clyde.	5641	1915	Robt. Langstaff	Campbellcroft	S. 1918	1*

*Horse requires inspection; Owner should look up route of Inspectors and present stallion at his nearest Inspection point at time stated.

DURHAM COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Thoor Patch	640	3940	St. Br.	4328	1911	S. J. McMillan	Campbellcroft	S. 1919	1
Black Model	16880	4811	Clyde.	5315	1914	J. W. Lowes	Cavan	F. 1918	1
Dunure Beaulieu (imp.)	12681	845	Clyde.	1741	1910	J. W. Lowes	Cavan (R.R. 1)	S. 1917	1
Pride of Balmyre (imp.)	9753	2484	Clyde.	3177	1906	Rupert Winslow	Cavan	S. 1915	1
Royal Ribbon (imp.)	13932	602	Clyde.	438	1910	Clydesdale Horse Breeders' Association	Darlington	S. 1919	1
Joe Gleam	16716	3729	Clyde.	4261	1912	A. W. Wilson	Franklin	F. 1918	A1
Mahratta (imp.)	13374	1450	Clyde.	2218	1907	Richard Wilson	Franklin	F. 1914	1
Terrington Denmark	774	3959	Hack.	4489	1912	A. W. Wilson	Franklin	F. 1918	1
Prince Palatine (imp.)	15907	3432	Clyde.	3887	1910	Grandy Brothers	Ida	F. 1918	A1
Chaigeley Admiration (imp.)	323	1051	Hack.	1063	1905	J. F. Staples	Ida	F. 1914	1
Golden Gleam (imp.)	8783	64	Clyde.	1065	1900	J. F. Staples	Ida	F. 1912	1
Golden Rod	20452	5280	Clyde.	5819	1917	J. F. Staples	Ida	F. 1918	1
King's Champion (imp.)	13174	343	Clyde.	280	1903	J. F. Staples	Ida	F. 1918	A1
Prince Imperial	21506	5466	Clyde.	6079	1916	R. J. Henders	Janetville	S. 1919	1
King Sable	961	1939	St. Br.	433	1902	Hugh McGill	Janetville (R.R. 2)	F. 1912	1
Marquis Freeland	16402	4726	Clyde.	4240	1912	Hugh McGill	Janetville (R.R. 2)	F. 1918	1
Anagram (imp.)	13825	2279	Clyde.	1143	1911	McIntyre Thornton	Janetville	F. 1918	1
Isonzo (imp.)	1646	2797	Per.	964	1908	G. H. Luxon	Kendall	S. 1919	1
Alois	5277	1996	Ger. Co.	2707	1907	J. D. Deyell & H. Nattross	Millbrook	F. 1914	1
Sir David Junior	14458	483	Clyde.	760	1909	John Hutchinson	Millbrook	F. 1916	1
Dunure Baron (imp.)	6150	1262	Clyde.	2055	1903	Patterson Brothers	Millbrook	F. 1914	1
Merry Baron (imp.)	17284	4475	Clyde.	4969	1912	Patterson Brothers	Millbrook	F. 1917	A1*
Golden Taylor	18590	4793	Clyde.	5326	1915	Geo. H. Hooton	Mt. Pleasant	F. 1918	A1
Morgan Rifleman	5653	1894	Mor.	2628	1905	Wm. J. Moore	Newcastle	F. 1914	1
Billy Bingen	2182	5276	St. Br.	5882	1916	Thos. Cowan	Orono	F. 1918	A1
Bobcaygeon Amherst	134	4781	Suff.	5276	1913	W. C. Henry	Orono	S. 1919	1
Lewie MacGregor	6221	3512	Clyde.	3252	1906	W. J. Coulter	Pontypool	S. 1914	1

ELGIN COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Radium (imp.)	13314	534	Clyde.	951	1905	David Robins	Aylmer	F. 1914	1
Naval Hero	18085	4830	Clyde.	5269	1914	F. E. Sansburn	Aylmer	S. 1919	2
Norfolk Performer	131	1573	Hack.	89	1901	Andrew Smith	Aylmer	F. 1918	A1
Sidmont Sprague	1178	3579	St. Br.	476	1901	C. J. Weisbrod & Co.	Aylmer	F. 1912	1
Mouchoir (imp.)	4725	3913	Per.	4342	1912	John Buchanan	Campbellton	F. 1918	A1
Submarine Prince	19271	4891	Clyde.	5150	1915	Alex. G. Duncanson	Dutton	F. 1918	1
Chester Charming	13367	2443	Clyde.	2690	1906	Chas. W. Jewell	Dutton	F. 1914	1

Kuroki 2nd (imp.)	626	3640	Shire	3247	1902	John McVannel	Dutton	F. 1914	1
Blacon Yet	8004	2984	Clyde.	2063	1906	Miner Ronson	Dutton	S. 1915	1
Elect Winters	1001	1982	St. Br.	482	1907	W. A. Sloan	Fingal	S. 1915	1
Jubilant	6745	5390	Per.	5543	1916	W. A. Sloan	Fingal	F. 1917	2*
Kingling	6744	5129	Per.	5529	1915	W. A. Sloan	Fingal	F. 1917	1*
Minulus (imp.)	10681	1279	Clyde.	2167	1907	W. A. Sloan	Fingal	F. 1914	1
Elgin Pride	19919	5201	Clyde.	5709	1916	Alex. McLachlin	Iona Sta.	S. 1918	1*
Pride of Huron	12124	2960	Clyde.	3134	1909	J. C. Burke	Lawrence Sta.	F. 1916	1
Jasper of Walnut Grove (imp.)	573	95	Shire	698	1908	Andrew A. Miller	Middlemarch	F. 1916	1
Klaustral (imp.)	4469	3989	Per.	4080	1910	F. Dunsford	New Sarum	F. 1918	1
Laharpe (imp.)	4459	3892	Per.	4059	1911	Jas. Brackenbury	Port Burwell (R.R. 1)	F. 1918	A1
Hofwart	2078	862	Ger. Co.	473	1907	Frank A. Smith	Port Burwell	F. 1917	A1
Dr. Ames	895	1140	St. Br.	426	1902	G. A. VanOrder	Port Burwell	F. 1914	1
Kozan (imp.)	3855	2870	Per.	3385	1910	C. E. Glasgow	Port Stanley	F. 1917	1
Black Duke	11736	143	Clyde.	748	1907	Robert Liddle	Rodney	S. 1915	1
Revelanta Stamp (imp.)	11584	648	Clyde.	702	1908	J. P. & R. J. Spence	Rodney	F. 1916	1
Jess Willard	17234	5351	Clyde.	5965	1915	Frank Comfort	Shedden	S. 1919	2
Cardyke Prince (imp.)	522	2738	Shire	3011	1903	Colin A. McPhail	Shedden	F. 1914	1
Tetinus (imp.)	2266	588	Per.	396	1908	E. A. Stafford	Shedden	F. 1916	2
Springfield Pride	17968	5377	Clyde.	5996	1915	John Williamson	Springfield (R.R. 2)	S. 1919	2
Up-To-Date Knight	14282	3934	Clyde.	4388	1912	John Williamson	Springfield	S. 1919	1
Butley Major (imp.)	32	1794	Suff.	2166	1908	Frank Leach	St. Thomas, Box 65	S. 1918	1
Tinto	4534	4808	Per.	251	1914	James Parish	St. Thomas	F. 1918	1
Arlon (imp.)	62	1915	Bel. Dr.	2026	1907	George Tupper	Tillsonburg	F. 1914	1
Prince William	8295	109	Clyde.	787	1906	Geo. W. Teall	Vienna	S. 1914	1
Gericault	3513	3187	Per.	3370	1912	Geo. B. O'Malley	Wallacetown	S. 1918	1*
Irish Jack	773	2436	Per.	36	1908	Geo. B. O'Malley	Wallacetown	S. 1915	1
Baron Blend	11276	1596	Clyde.	1764	1909	W. Monteith	West Lorne	S. 1917	1
Tuttle Brook Lad	1234	5110	Shire	5644	1915	Albert Schleihauf	West Lorne (R.R. 1)	S. 1918	2*

ESSEX COUNTY.

Mount Pleasant Jim	18425	5357	Clyde.	5877	1916	D. A. & A. A. Ouellette	Amherstburg	S. 1919	1
Robbie Burns	10108	1880	Clyde.	2702	1909	Chas. Corbett	Belle River (R.R. 1)	S. 1917	1
Keir Jimmie	12968	3086	Clyde.	3617	1911	David Coulter	Blytheswood	F. 1918	1
Isaac P.	1943	349	Per.	304	1909	W. J. Fox	Blytheswood	F. 1916	1
Bob Bennett	3094	3698	Per.	4000	1912	R. J. Goslin & Son	Cottam	F. 1918	1
Frederic	525	815	Per.	1880	1906	R. J. Goslin & Son	Cottam	S. 1914	1
Keir's Royal Renown	16742	4350	Clyde.	4801	1913	W. G. Hensman	Essex	S. 1919	1
Mayor	4239	3625	Per.	3532	1910	C. E. Forman	Harrow	F. 1918	1
Rodrique, Jr.	4237	3624	Per.	3518	1908	C. Forman	Harrow	F. 1916	1

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ESSEX COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Edison	6566	5301	Per.	5811	1916	J. Leroy Allen	Kingsville	F. 1918	1
Fendlair (imp.)	745	3397	Per.	3156	1904	Thos. Clark	Kingsville	F. 1914	1
Prince Albert	4226	3275	Per.	3750	1910	Christian Johnson	Kingsville	F. 1918	1
Bay Jocko	1373	2037	St. Br.	2803	1907	John Lampman	Kingsville	S. 1915	1
Roliere	7374	5120	Per.	5657	1916	Lambert P. Wigle	Kingsville	S. 1918	A1*
King Tullock	14038	5440	Clyde.	6061	1912	Lewis Wigle	Leamington	S. 1919	1
Celtic Park	15131	3663	Clyde.	4110	1912	Thos. Barnes & Son	Maidstone	F. 1918	1
Gallant Clyde	14771	3721	Clyde.	4109	1912	Thos. Phillips	Maidstone	F. 1918	1
Keir Democrat 2nd	14751	4523	Clyde.	4148	1912	Jas. Charette	McGregor	F. 1918	1
Royal Arch	11673	3039	Clyde.	3586	1910	Frank Charette	New Canaan	S. 1919	1
Lord Lochinvar	18741	4743	Clyde.	5148	1914	John D. Hill	Ruscomb	F. 1918	A1
Fred Steele	1427	3253	St. Br.	3644	1910	W. W. Hill	Ruscomb	F. 1918	1
Tullock Again	14284	4667	Clyde.	5094	1912	Adam Knister	Ruscomb	F. 1917	1*
Van Birr	11664	1683	Clyde.	2243	1910	Gordon Cowan	Staples	F. 1918	1
Carnot de Gemel, Jr.	968	4665	Bel. Dr.	5093	1913	J. B. Lalonde	Stoney Point	F. 1917	1*
Carnot De Gemel (imp.)	164	909	Bel. Dr.	1290	1905	J. B. Lalonde	Stoney Point	F. 1914	1
Baron Mansfield (imp.)	11466	4094	Clyde.	1930	1908	Arthur Holmes	Tilbury (R.R. 4)	F. 1916	2
Maplehurst Forest King	677	4446	Shire	4943	1909	Armand Palmer	Tilbury	S. 1916	1
Dolphie Brino	2292	4703	St. Br.	5158	1913	Alex. Trudell	Tilbury	F. 1918	1
Captain Black	6564	5222	Per.	5803	1916	A. M. Newman	Woodslee (R.R. 2)	F. 1918	1

FRONTENAC COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Wildwing	760	1084	St. Br.	1506	1911	John Williams	Battersea	F. 1918	1
Prince Charlie	10475	394	Clyde.	584	1908	Samuel Shanks	Canonto	F. 1916	1
Chief Autocrat	16470	4997	Clyde.	5059	1914	Jacob E. Shibley & Son	Harrowsmith	F. 1917	1*
Farmer's Pride	3392	2777	Per.	3102	1906	John Alarie	Kingston	S. 1914	1
Signature	2764	5438	St. Br.	5948	1915	Geo. Darragh, 172 King St.	Kingston	S. 1919	1
King George	7353	5238	Per.	5834	1916	C. W. Langwith, 252 Albert St.	Kingston	F. 1918	1
Colonel	3476	2763	Per.	2099	1907	Lewis Martin	Kingston	S. 1915	2
Victor Forbes	2544	2576	St. Br.	3199	1910	Thos. K. Nicholson	Kingston	F. 1918	1
Penalty	1970	4299	St. Br.	4890	1911	W. C. Randall	Kingston	F. 1917	1*
Exaltim	758	3300	St. Br.	3787	1910	E. S. Steen	Kingston	F. 1918	1
Judge Murphy	1029	2267	St. Br.	315	1908	Fred Whitney	Kingston	F. 1916	1
Kabot (imp.)	3001	521	Per.	557	1910	The Storrington Stock Co.	Sunbury	F. 1918	1
Amardale	1858	4569	St. Br.	5044	1913	Oliver Hawkins	Wolfe Island	F. 1917	1*
Victor William (imp.)	16377	3894	Clyde.	4462	1912	Ed. J. Horne	Wolfe Island (R.R. 4)	S. 1919	1
Peter Hawkins	2947	5480	St. Br.	6084	1916	William Hawkins	Wolfe Island	S. 1919	1
Beauchemier	3844	4544	Per.	4943	1913	Geo. E. Keys	Wolfe Island	F. 1917	2*

GLENGARRY COUNTY.

Del Monte Bond	736	1672	St. Br. ...2479	1906	N. M. Bellamy	Alexandria	F. 1914	1
Joigny (imp.)	2820	1619	Per. 1676	1909	N. M. Bellamy and Moses Proulx	Alexandria	F. 1916	1
Royal Howick	17867	3253	Clyde. 5859	1915	D. P. McMillan	Alexandria	F. 1918	1
Glassford Laird (imp.)	11875	767	Clyde. 1449	1907	J. H. McVicar	Bainsville	F. 1914	1
Landerneau (imp.)	3979	3095	Per. 3650	1911	Alex. McKay	Dalhousie Sta.	S. 1919	1
Peter Chicken	2275	4879	St. Br. ...5296	1911	Ranger Brothers	Dalhousie Sta.	F. 1918	1
MacLeod	7213	3243	Clyde. 3516	1905	Emmanuel Brunet	Dalkeith	F. 1914	1
Major Dick	20777	5475	Clyde. 6049	1916	Neil S. McLeod	Dalkeith	S. 1919	1
Aberdeen's Pride	13503	3005	Clyde. 3553	1911	Geo. N. Vogan	Dalkeith	F. 1918	1
Castle Baron (imp.)	6127	1315	Clyde. 1911	1904	Wm. D. MacLeod	Dunvegan (R.R. 1)	F. 1914	1
Fyvie Prince (imp.)	6126	826	Clyde. 1910	1904	Wm. D. MacLeod	Dunvegan (R.R. 1)	F. 1914	1
Black Beauty of Lachute	564	5476	Hack. 6056	1909	Stewart McRae	Glen Robertson	S. 1919	1
Bruce	8948	1076	Clyde. 323	1908	Joseph St. Onge	Glen Robertson	S. 1915	1
Impeccable	2245	3950	Per. 1558	1908	W. S. Jamieson & D. McMillan	Glen Sandfield	S. 1917	1
Percheron (imp.)	258	879	Per. 1675	1902	W. R. Montgomery	Gravel Hill	F. 1914	1
Vivacity (imp.)	4444	685	Clyde. 1083	1902	A. J. R. McDonell	Greenfield	F. 1912	1
Joffre of Maxwelton	5522	1932	Per. 5292	1915	J. A. MacLachlin	Green Valley	F. 1918	1
Melton Street	207	5392	Thor. 5688	1908	The Canadian National Bureau of Breeding John A. McArthur (Agt.)	Montreal Lancaster.	S. 1919	1
Cock of the North	16592	4339	Clyde. 4745	1914	Hugh A. Robertson	Martintown	F. 1917	1*
Duke of Ormond	10575	2155	Clyde. 2877	1909	Ross Brothers	Martintown	F. 1916	1
Smylett Performer (imp.)	164	145	Hack. 708	1900	J. J. Anderson & Jas. Stuart	Maxville	F. 1914	1
Mount Victoria Polonius	771	5197	Hack. 5664	1914	M. D. Campbell	McCrimmon	S. 1918	2*
Rigolo (imp.)	3586	1625	Per. 1461	1902	McRae, MacDonald & O'Day	St. Raphael West	S. 1914	1
Rigolo	2670	171	Per. 1079	1909	W. J. Chisholm	Summerstown Sta.	F. 1916	1
Victor of St. Lawrence	12721	440	Clyde. 855	1909	Donald Hope	Summerstown	F. 1916	1
Prince Lothian	17057	5099	Clyde. 5616	1914	Oliver Major	Williamstown	S. 1918	1*
Bold Archer	5477	1135	Clyde. 1004	1903	P. & D. McCrimmon	Williamstown	F. 1912	1

GRENVILLE COUNTY.

Charming Choice	18094	5477	Clyde. 6062	1915	Jos. Crites	Cardinal	S. 1919	1
Gitchie Manato	920	2970	St. Br. ...3404	1899	Geo. E. Lane	Cardinal	S. 1914	1
Gartly Baron	10423	2717	Clyde. 650	1909	Richard Gaston	Jasper	F. 1916	2
Hal Clause	017	545	St. Br. ... 655	1909	T. M. Griffin	Kemptville	F. 1916	1
Prince Guard	16996	4977	Clyde. 5281	1914	Benjamin Henry	Kemptville	F. 1918	1
Beryllian	2214	5212	St. Br. ...5758	1915	H. J. Patterson	Kemptville	S. 1918	1*

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GRENVILLE COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Bellboleer	401	1701	St. Br.	2539	1909	Thos. Graham	Merrickville	F. 1916	1
Sundown	575	1415	Shire	2310	1908	Joseph Fletcher, Estate	Oxford Mills	S. 1917	1
Mac Blacon	20343	5194	Clyde.	5681	1915	A. B. Murphy	Oxford Mills	S. 1918	1*
Gasteropade (imp.)	1528	451	Per.	1182	1906	G. E. Bradley	Prescott	F. 1914	1
Megiddo	17386	5396	Clyde.	6019	1915	Horace Reed	Prescott (R.R. 3)	S. 1919	1
Kirk Hero	20244	5195	Clyde.	5696	1913	Neil Cummings	Spencerville	S. 1918	2*
Koyama 2nd	17561	5196	Clyde.	5697	1915	Ralph Cummings	Spencerville	S. 1918	1*
Cecil R.	874	740	St. Br.	1184	1899	J. A. Hyndman	Spencerville	F. 1912	1

GREY COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Buttress 2nd	19419	5165	Clyde.	5660	1914	Denis Cahoon	Annan	S. 1918	1*
Mardi (imp.)	4441	3712	Per.	4245	1912	W. M. Atchison	Bognor	F. 1918	1
Royal Henry 2nd	18166	5479	Clyde.	6075	1915	John C. Morrison	Bognor (R.R. 1)	S. 1919	2
Fortune Abbot	20667	5436	Clyde.	6070	1915	Arthur McKay	Cape Rich (R.R. 3)	S. 1919	2
Stalwart (imp.)	7813	384	Clyde.	901	1902	P. J. Ryan	Cedarville	F. 1912	1
Banquet (imp.)	9644	1585	Clyde.	363	1905	Brown Brothers	Clarksburg	F. 1914	1
Irmak (imp.)	1658	2386	Per.	2922	1903	John Brown	Clarksburg	S. 1917	1
Sandy Busk	19340	5295	Clyde.	5837	1916	Geo. Duncan	Dundalk	F. 1918	1
Baron Archie (imp.)	12526	5429	Clyde.	5950	1906	R. R. Kinnell	Dundalk	S. 1919	A1
Jaures (imp.)	3072	1473	Per.	2356	1909	R. R. Kinnell	Dundalk	S. 1917	2
Muskogee Baron	1759	4536	St. Br.	4811	1908	Chas. Palmer	Dundalk	F. 1916	1
The Peer (imp.)	13845	1123	Clyde.	1243	1910	I. E. Haug	Durham	F. 1918	1
Seneca (imp.)	13915	1477	Clyde.	2362	1910	J. J. Jandt	Elmwood	S. 1919	1
Grandee Pride	18306	5306	Clyde.	5946	1916	Albert Dawn	Epping	S. 1919	1
Abbot Fashion	21402	5450	Clyde.	6073	1916	J. A. Myles	Epping	S. 1919	1
Chief Secretary	20347	5312	Clyde.	5839	1915	Jas. A. Myles & Co.	Epping	F. 1918	1
Sir Byron	905	5313	Hack.	5840	1913	Jas. A. Myles & Co.	Epping	F. 1918	1
Baron Grandee	18305	5291	Clyde.	5881	1916	Albert Dawn	Fairmount	F. 1918	1
Cairnbrogie Ronald	19571	5430	Clyde.	6020	1916	William Brewster	Feversham	S. 1919	1
Diamond Scott	19710	5105	Clyde.	5581	1915	William Davidson, Jr.	Feversham	S. 1918	1*
Kentucky Sam	856	736	St. Br.	1163	1905	Geo. H. Whiteoak	Feversham	F. 1914	1
Ronald of Tangy (imp.)	12238	2758	Clyde.	689	1907	Isaac Eby	Hanover	F. 1914	1
Dunure George (imp.)	6886	742	Clyde.	1554	1904	Henry Fritz	Hanover	F. 1914	1
Oro Sphinx	1115	4064	St. Br.	271	1909	Walter S. Lines	Hanover	S. 1917	1
Copernicus	14054	3837	Clyde.	4277	1912	W. M. Groat	Holstein	F. 1918	1
Lockwood Chief	14437	3660	Clyde.	4049	1912	W. M. Groat	Holstein	F. 1918	1
Foremost (imp.)	13848	1120	Clyde.	1240	1910	Edward Hoy	Holstein	F. 1918	1

Marnix (imp.)	607	1519	Bel. Dr.	1059	1902	Edward Hoy	Holstein	F. 1912	1
St. Ivel (imp.)	15227	3077	Clyde.	2616	1911	Alex. McDonald	Holstein (R.R. 2)	F. 1918	1
Laddie Evergreen	17441	5127	Clyde.	5566	1915	Wm. Dingwall	Hopeville	S. 1918	1*
Fortune Teller (imp.)	8739	1662	Clyde.	2528	1899	R. R. Kinnell	Hopeville	F. 1914	1
Predominant (imp.)	12490	1663	Clyde.	2527	1909	R. R. Kinnell	Hopeville	F. 1916	1
Gipsy Jake	2642	4907	St. Br.	5174	1914	Jacob Hunt	Kilsyth	F. 1918	1
Barney Doyle	16809	4746	Clyde.	5175	1914	W. R. Burnett	Markdale	F. 1918	1
Cupbearer	444	793	St. Br.	1777	1906	Jas. A. Crowston	Markdale	F. 1917	A1
Gallant Baron (imp.)	8003	1304	Clyde.	1948	1906	Jas. A. Crowston	Markdale	F. 1914	1
Lainshaw Castle (imp.)	13807	1083	Clyde.	1778	1909	Jas. A. Crowston	Markdale	F. 1916	1
Nigout (imp.)	4442	4486	Per.	4962	1913	Jas. A. Crowston	Markdale	F. 1917	1*
Horizon (imp.)	16341	3751	Clyde.	4279	1911	William Foster	Markdale	F. 1918	A1
Bailie Boy (imp.)	13766	612	Clyde.	633	1910	Angus McInnis	Markdale	F. 1918	1
Dandy Lad	19760	5007	Clyde.	5547	1915	Robert Murray	Markdale	S. 1918	1*
Isomar (imp.)	14053	1612	Clyde.	2483	1910	J. S. Shepherdson	Markdale	F. 1917	A1
Pride of All	6455	914	Clyde.	1577	1905	R. D. & V. G. Bowes	Meaford (R.R. 1)	F. 1914	1
President Roosevelt (imp.)	7759	2716	Clyde.	82	1902	John McIntyre	Meaford	F. 1912	1
Manor Prince	15805	2846	Clyde.	3351	1910	John & M. A. McIntyre	Meaford	S. 1918	1
Patchi	2907	5446	St. Br.	6071	1914	Jas. C. Pilgrim	Meaford	S. 1919	1
Blyth Prince (imp.)	13758	691	Clyde.	1465	1910	William Aldcorn	Mt. Forest	F. 1918	1
Black Boy (imp.)	11780	1578	Clyde.	1657	1908	Geo. Drewery	Mt. Forest	S. 1917	1
Royal Winsome	20313	5126	Clyde.	5533	1916	Chas. Gilstorf & Sons	Mt. Forest	F. 1917	1*
Sir Harold (imp.)	11880	415	Clyde.	678	1907	Walter A. Reeves	Mt. Forest	F. 1914	1
Duncan	9429	5469	Per.	6042	1913	Christopher Brock	Owen Sound	S. 1919	1
Teddy Roosevelt	18517	5433	Clyde.	5796	1916	Milton E. Bebee	Owen Sound	F. 1918	1
Peter Burtwood	1737	4010	St. Br.	4157	1909	J. E. Marsh	Owen Sound	F. 1917	A1
Maidenhall (imp.)	8459	63	Clyde.	1089	1906	R. J. Norton	Owen Sound	F. 1914	1
Sir Crossley (imp.)	11785	816	Clyde.	1884	1907	R. J. Norton	Owen Sound	F. 1914	1
Sir John A. 3rd	17393	5089	Clyde	5173	1914	Charles Eager	Presque Isle	F. 1918	1
Joe MacGregor	1438	4190	St. Br.	4415	1901	Gordon J. Eager	Presque Isle	S. 1915	1
Royal Luck (imp.)	15281	2929	Clyde.	3407	1911	Grey Clydesdale Assn.	Presque Isle	F. 1917	1*
Sir Marquis	19339	5132	Clyde.	5541	1916	Samuel Batchelor	Proton Sta.	F. 1917	1*
Fortune Prince	14201	457	Clyde.	1138	1910	Robt. Grummett	Proton	F. 1918	1
Queen's Regent (imp.)	12683	2326	Clyde.	2983	1909	Gordon R. MacDonald	Proton Sta.	S. 1916	1
Silver Strand (imp.)	9643	515	Clyde.	1307	1904	Gordon R. MacDonald	Proton Sta.	F. 1914	1
Lord Kelvin	5736	3731	Clyde.	1713	1905	Isaac Brown	Rocklyn (R.R. 2)	F. 1914	1
Prince Armadale	18614	5298	Clyde	5956	1916	Jas. H. Lemon	Silcote	S. 1919	1
Rayo	19136	4685	Clyde.	5109	1914	S. T. Wilton	Singhampton	F. 1918	1
Royal Knight (imp.)	15294	3252	Clyde.	3530	1910	Geo. Henderson	Tara	F. 1918	1
Barrie Boy	950	4045	St. Br.	197	1909	P. A. Harrison & J. A. Dixon	Varney	S. 1917	1

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HALDIMAND COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert
Norwell Chieftain (imp.)	828	383	Shire	798	1908	George Allen	Caledonia	F. 1916	1
Farmer	8869	1700	Clyde.	2533	1909	Owen Andrews	Caledonia	S. 1919	1
Briton	5978	727	Clyde.	1110	1905	Fraser Buzza	Caledonia (R.R. 2)	S. 1915	1
Kinpurnie (imp.)	7817	495	Clyde.	1171	1905	Fred Moore	Caledonia	F. 1914	1
Peter Rene	2624	5251	St. Br.	5847	1916	I. J. Smelcer	Caledonia	F. 1918	1
Peter Watts	2623	5075	St. Br.	5573	1911	I. J. Smelcer	Caledonia	S. 1918	1
Jokai (imp.)	3073	1110	Per.	2085	1909	David Wilson	Clayton	F. 1916	1
Dominion Chief	18482	5382	Clyde.	6022	1916	William Anger	Dunnville	S. 1919	1
Jabloir	4019	3678	Per.	3989	1909	Dunnville Per. Horse Assn.	Dunnville	F. 1916	1
King Medium	2636	5297	St. Br.	5523	1916	H. F. Middaugh	Dunnville	F. 1917	1*
Norfolk King	9814	548	Clyde.	1585	1908	David Patton	Dunnville	S. 1915	1
Kentucky Owyho	818	4078	St. Br.	576	1907	G. F. Windecker	Dunnville	S. 1915	1
Jarnac (imp.)	3053	3511	Per.	2971	1909	Nicholas Bacher	Fisherville	S. 1916	1
Gayspark (imp.)	6989	645	Clyde.	680	1901	Geo. Gilbertson	Hagersville	F. 1912	1
Opulence	8641	644	Clyde.	677	1902	Geo. Gilbertson	Hagersville	F. 1912	1
Hiawatha Charming	20041	5317	Clyde.	5849	1917	Mrs. John Gilbertson	Hagersville	F. 1918	1
Argyle Duke	13620	277	Clyde.	979	1911	Henry Hammond	Hagersville	F. 1918	1
Prince Argyle	20773	5223	Clyde.	5850	1917	J. H. Hammond	Hagersville	F. 1918	1
Wilfred King	17025	4598	Clyde.	4905	1913	Anthony Harris	Hagersville	F. 1917	2*
Lord Commodore	15475	4321	Clyde.	4764	1913	Murray Martin	Hagersville	S. 1918	1*
K. L. W.	2922	5413	St. Br.	5524	1916	Wesley McDougall	Hagersville	F. 1918	1
Petain	5063	5061	Per.	5525	1915	Albert Snell	Hagersville	F. 1917	1*
Elsing Lambert Shales	708	4073	Hack.	4586	1912	Wm. E. Winger	Hagersville	F. 1918	1
General Haig 2nd	20909	5393	Clyde.	5964	1916	N. C. Montague	Jarvis	S. 1919	1
King of Gretna (imp.)	12666	710	Clyde.	1223	1909	Montague, Nichol & Martin	Jarvis	F. 1916	1
Clarence	6899	5418	Per.	6005	1916	Thos. Parkinson	Jarvis	S. 1919	1
Maxwalton	6900	5439	Per.	6055	1917	Thos. Parkinson	Jarvis	S. 1919	1
Johnnie Mac	6761	1950	Clyde.	1384	1906	Arthur Porter	Jarvis	F. 1914	1
Galicer	4918	5018	Per.	5522	1915	George Rinker	Lowbanks	F. 1917	1*
Baron Leven (imp.)	6108	416	Clyde.	679	1902	Milo A. Wood	Nanticoke	F. 1912	1
Prickwillow Connaught (imp.)	747	4001	Hack.	4288	1899	Alfred Lamb	Selkirk	F. 1914	1
K. L. Todd	1134	3570	St. Br.	3908	1909	H. A. Lamb	Selkirk	F. 1916	1

HALTON COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert
Silver Duke	16586	4838	Clyde.	5350	1914	D. W. Coke	Acton West	F. 1918	1
The Reprobate	1694	3285	St. Br.	198	1899	W. J. Gilks	Allendale	S. 1914	1
Quebec Boy	745	611	Fr. Can.	412	1903	W. W. Boyd	Burlington	F. 1912	1

Perfection	4960	5171	Per.	5694	1915	Chas. A. Newell	Campbellville	S. 1918	1*
Isly (imp.)	3066	1433	Per.	2098	1908	James Hume	Georgetown	F. 1917	A1
Cabot	6533	5378	Per.	6008	1917	Wm. Gunby	Millgrove	S. 1919	1
Hydrogene (imp.)	1050	1941	Per.	626	1907	W. E. McCready	Milton West	F. 1914	1
Lampiste (imp.)	3291	397	Per.	1366	1903	W. E. McCready	Milton West	F. 1914	1
Luth (imp.)	4470	3991	Per.	4086	1911	W. E. McCready	Milton West	F. 1918	1
Sir Milton	14273	3502	Clyde.	3919	1910	Thos. McKenzie	Milton West	S. 1917	1
Dunottar (imp.)	13906	2955	Clyde.	3403	1911	Telfer Brothers	Milton West	S. 1918	A1
Bonnie Russel	18161	4739	Clyde.	5206	1913	Chas. W. Donoven	Moffatt	F. 1918	1
Hearts of Oak	1065	5368	Thor.	5876	1910	Harry Giddings	Oakville	S. 1919	1
Oulton Lowe Model (imp.)	1212	4054	Shire	4591	1906	G. E. Morden & Son	Oakville	S. 1915	1
Main Chance	524	361	Thor.	406	1904	Jacob E. Lucas	Palermo	F. 1912	1

HASTINGS COUNTY.

George Rayner	026	3551	St. Br.	3835	1912	F. Allore	Belleville	F. 1918	1
Golden Rayner	090	4722	St. Br.	5255	1915	John W. Cross	Belleville	F. 1918	2
Billy Kay	0153	5042	St. Br.	5577	1913	A. C. Dafoe	Belleville	S. 1918	1*
Yorick (imp.)	14089	4601	Clyde.	1189	1910	John J. Fitzgerald	Belleville	F. 1917	1
Matthew Hume	2932	3481	St. Br.	3504	1902	C. E. Gascoyne	Belleville	S. 1915	1
Riverside Coin	5746	731	Clyde.	870	1907	William Lloyd	Belleville	S. 1915	1
Robert Patch	184	4270	St. Br.	2042	1904	W. J. Orr	Belleville	F. 1915	1
Peter Range	2226	4735	St. Br.	5294	1913	C. F. Robinson	Belleville	F. 1918	A1
Bartlett	251	3954	St. Br.	4326	1911	James Redcliffe	Bellview	S. 1919	1
Golden Key (imp.)	9997	1570	Clyde.	390	1906	Philip Scrimshaw & Son	Bellview	F. 1914	1
Echo's Fancy	20950	5235	Clyde.	5862	1916	David Quinlin	Cooper	F. 1918	1
Black Knight	5490	931	Clyde.	1379	1903	John C. Schriver	Detlor	S. 1916	1
Sir Wilfred	6502	2226	Clyde.	2048	1896	F. A. Comerford	Eldorado	S. 1915	1
Jack Rayner	086	4723	St. Br.	5258	1915	Ashley Stock Farm Estate	Foxboro	F. 1918	1
Judge Carman	1073	4197	St. Br.	4691	1913	Ashley Stock Farm Estate	Foxboro	F. 1918	1
Kerensky	0149	5311	St. Br.	5801	1917	Ashley Stock Farm Estate	Foxboro	F. 1918	1
Ridlon	782	524	St. Br.	51	1902	Cyrus Garrison	Frankford	F. 1912	1
Alick	645	4323	St. Br.	4215	1912	J. U. Simmons	Frankford	S. 1919	1
Lord Canada	20561	5232	Clyde.	5802	1916	Maurice Gunter	Gunter	F. 1918	1
Scotland Clyde	16158	4690	Clyde.	5110	1914	J. E. Wellman	Gunter	F. 1918	1
Pioneer Prince	8608	1605	Clyde.	169	1908	Samuel Ray	Ivanhoe	F. 1916	1
Moncreiffe Albion (imp.)	12800	1676	Clyde.	1219	1909	J. E. Harrison	Marlbank	S. 1917	1
Prince Pride	18658	5434	Clyde.	5971	1916	William McCoy	Marmora	S. 1919	1
Winchester (imp.)	282	2607	Hack.	49	1901	Flynn & McCullough	Marmora	F. 1912	2
Silloth Again	12147	1991	Clyde.	79	1910	William J. Douglas	Maynooth	S. 1919	1
Gallant Cross	12789	3185	Clyde.	3715	1911	John S. Hill	Shannonville	F. 1917	2*

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HASTINGS COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Harford Ashley	083	4853	St. Br.	5095	1913	Jas. J. Fitzpatrick	Stirling	F. 1918	1
Julien (imp.)	1465	4170	Per.	4663	1909	W. Kingston, J. Belshaw and A Tweedie	Stirling	F. 1916	1
Jackson	4121	3268	Per.	3758	1909	Daniel Whalen	Stoco	S. 1917	1
Gascon (imp.)	461	4241	Bel. Dr.	171	1905	R. W. O'Brien	The Ridge	S. 1915	1
Sheriff Todd	253	4267	St. Br.	2421	1909	Damen King	Trenton, Box 1014	F. 1916	1
Todd McGregor	1901	4683	St. Br.	5106	1909	J. E. Vassaw	Trenton	F. 1916	1

HURON COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Maitland Boy	12338	2625	Clyde.	2609	1907	Henry Wagner	Auburn	F. 1914	2
Albion's Glory (imp.)	8732	2546	Clyde.	3099	1906	Robt. Penhale	Bayfield	S. 1914	1
Lord Mansfield	21567	1734	Clyde.	2385	1904	James Evans	Beechwood	S. 1914	1
King Gartsherrie	10219	1680	Clyde.	2311	1909	H. F. Kirkby	Belgrave	F. 1916	1
Major Hal	063	2257	St. Br.	2853	1907	Con. Baker	Belmore	F. 1914	1
Mascot (imp.)	4598	1328	Clyde.	1850	1902	J. W. King	Bluevale	F. 1914	1
Nation's Stamp	17138	5068	Clyde.	5622	1915	Thos. Coulter	Blyth	S. 1918	2*
Elmer Dickson	2295	4881	St. Br.	5396	1909	Thos. J. Coulter	Blyth	F. 1917	A1
Ike Medium	1070	2936	St. Br.	3474	1909	Thos. J. Coulter	Blyth	F. 1917	A1
Pride of Glencairn (imp.)	10377	2652	Clyde.	820	1908	J. E. Ellis	Blyth	F. 1918	A1
Honest John	12083	2	Clyde.	397	1910	Jos. & Wm. Gray	Blyth	S. 1919	1
Nation's Stamp	17138	5068	Clyde.	5622	1915	Jos. & Wm. Gray	Blyth	S. 1918	2*
Blacon Cross (imp.)	9559	876	Clyde.	1655	1907	Stubb Brothers	Blyth	F. 1914	1
Index (imp.)	3140	363	Per.	421	1908	Wm. Berry	Brucefield	F. 1916	1
Earl O'Clay	12035	699	Clyde.	953	1905	Robert Murdoch	Brucefield	S. 1915	1
Pathfinder (imp.)	15330	3880	Clyde.	1035	1912	W. T. Colwill	Centralia	S. 1919	2
Price Macellus	19614	5421	Clyde.	5993	1916	W. T. Colwill	Centralia	S. 1919	2
Prince of Carrick (imp.)	17249	4756	Clyde.	5133	1915	W. T. Colwill	Centralia	S. 1919	1
Balmerino (imp.)	11579	3459	Clyde.	3903	1907	William Fear	Clinton	F. 1914	1
Royal Melrose	652	5047	St. Br.	3670	1912	J. J. McCaughey	Clinton	S. 1918	1*
Rio Grande (imp.)	14940	2180	Clyde.	2863	1907	William J. Ross	Clinton	F. 1914	1
Prince Paramount	20410	5341	Clyde.	5973	1917	Henry Snyder	Clinton	S. 1919	1
Charming Prince (imp.)	11477	1601	Clyde.	2577	1909	James Cockwill	Crediton	S. 1916	2
Tatler (imp.)	14584	1656	Clyde.	2571	1910	Eli King	Crediton	S. 1919	1
Sir Otto	13636	68	Clyde.	1002	1910	E. Walper & Peter Eisenbach	Dashwood	F. 1916	1*
Rex Downing	1642	3855	St. Br.	4447	1909	William Sweitzer	Dashwood (R.R. 2)	F. 1916	1
Blacon King (imp.)	11686	4243	Clyde.	3243	1908	Isaiah Tetreau	Dashwood	F. 1916	1
Humide (imp.)	1480	376	Per.	524	1907	William Witzel	Dashwood (R.R. 3)	F. 1914	1

Gladstone	5480	4757	Per.	5157	1914	George Irwin	Dungannon	F. 1918	1
Red McKinney	1002	1151	St. Br.	1688	1905	James Berry	Egmondville	S. 1913	1
The Salvage	2838	5348	St. Br.	5920	1916	James Essery	Exeter	S. 1919	A1
Red Heir	956	2593	St. Br.	1131	1906	William Mitchell	Exeter	S. 1915	1
John Smollett	1419	3263	St. Br.	2814	1905	H. H. Brown	Exeter	F. 1914	1
Hygrade	2386	3595	St. Br.	2993	1907	Wm. H. Brinley	Goderich	F. 1914	2
Sir Randolph (imp.)	9547	473	Clyde.	1084	1902	Geo. J. Ferguson	Goderich	F. 1917	A1
Acton Stamp	19858	5052	Clyde.	5559	1915	Richard Porter	Goderich	S. 1918	1*
Avon MacGregor	19945	5054	Clyde.	5580	1913	Albert Johnston	Gorrie	S. 1918	1*
Gentry De Forest	081	5198	St. Br.	4534	1910	J. J. Miller	Hay	S. 1918	2
Golden Ball (imp.)	13286	1113	Clyde.	1211	1908	J. J. Miller	Hay	F. 1916	1
Attractive Prince (imp.)	16471	3922	Clyde.	4359	1901	W. J. Cooper	Henfryn	S. 1915	1
Intime (imp.)	6219	5460	Per.	6011	1908	H. C. Soldan	Hensall	S. 1919	A1
Silver McKinney	1860	3597	St. Br.	3965	1907	Thos. Murdock	Hensall	F. 1914	2
Colonel Graham (imp)	9235	1370	Clyde.	2331	1902	T. J. Berry	Hensall	S. 1915	1
Commodore (imp.)	9596	1681	Clyde.	2284	1907	T. J. Berry	Hensall	F. 1917	A1
Jabot (imp.)	3139	1369	Per.	2332	1909	T. J. Berry	Hensall	F. 1917	A1
King Thomas (imp.)	9254	1366	Clyde.	2330	1902	T. J. Berry	Hensall	F. 1918	A1
Logan Jr.	7818	5231	Per.	5821	1916	T. J. Berry	Hensall	F. 1918	1
Nard (imp.)	6382	4936	Per.	5444	1913	T. J. Berry	Hensall	F. 1918	A1
Budweiser	9070	5414	Per.	5911	1915	H. C. Soldan	Hensall	S 1919	1
General Bruce	11278	402	Clyde.	595	1910	H. C. Soldan	Hensall	F. 1918	1
King John (imp. in Dam)	17226	4363	Clyde.	4887	1913	W. H. Kay	Kirkton	F. 1917	1*
Baron Randolph	20184	5163	Clyde.	5658	1915	Thos. A. Powell	Kirkton (R.R. 1)	S. 1918	1*
Lord Southwark (imp.)	11243	5193	Clyde.	5678	1909	James Leiper	Londesboro	S. 1918	2
Emulation (imp.)	14450	817	Clyde.	1885	1909	Leiper & Moon	Londesboro	F. 1916	2
Mosstrooper Champion (imp.)	3346	2991	Clyde.	755	1900	William Wesley Vodden	Londesboro	S. 1914	1
Sir Hector of Westfield (imp.)	14060	533	Clyde.	948	1907	Thos. Inglis	Lucknow	F. 1914	1
Happy Jack	16508	4716	Clyde.	5134	1914	Geo. Swan	Lucknow (R.R. 3)	F. 1918	1
Avondale	787	4944	Hack.	5278	1914	Richard Twamley	Lucknow (R.R. 7)	F. 1918	1
Marshall Guedo	8091	5464	Per.	5854	1917	Joseph Brewster	Seaforth	S. 1919	1
Jay Medium	1071	2629	St. Br.	2741	1904	R. B. Govenlock	Seaforth	F. 1914	1
Baron International	18436	5247	Clyde.	5880	1916	T. J. McMichael & Sons	Seaforth	F. 1918	1
Colonel Bowers	19005	4522	Clyde.	5025	1913	Thos. McMichael & Son	Seaforth	S. 1918	1*
Dextro	7819	5185	Per.	5734	1914	T.J.McMichael & J.P.Fischer	Seaforth	S. 1918	1*
Glen Rae	8353	1311	Clyde.	1935	1907	Thos. McMichael & Son	Seaforth	F. 1914	1
Royal of Dunholmhill	18787	5048	Clyde.	5610	1916	Thos. McMichael & Son	Seaforth	S. 1918	1*
Dunure Gartly	9221	97	Clyde.	704	1908	G. W. Nott	Seaforth	S. 1917	1
Golden Guinea	20738	5275	Clyde.	5777	1917	G. W. Nott	Seaforth	F. 1918	1
Todd Winters	2337	4785	St. Br.	5304	1914	Robt. M. Pinkney	Seaforth	F. 1918	1
Emperor McKinney	1653	4075	St. Br.	4341	1909	Chas. Riley	Seaforth	F. 1916	1

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HURON COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Cumberland Gem (imp.)	13978	1367	Clyde.	2329	1910	John J. McGavin	Walton	F. 1918	1
Castelar	225	2824	Per.	3354	1905	J. & S. Freiburger	Wingham	F. 1914	1
Wildbrino King	79	3918	St. Br.	4046	1903	V. R. VanNorman	Wingham	F. 1914	1
Dansire	1931	4383	St. Br.	4794	1913	Isaac Wright	Wingham	F. 1917	1*
Drumburle Favourite	21138	5380	Clyde.	6033	1917	Isaac Wright	Wingham	S. 1919	1
Huron Oak	19294	5379	Clyde.	6010	1916	Isaac Wright	Wingham	S. 1919	1
Kingsmount (imp.)	16025	3081	Clyde.	3640	1908	George Coward	Woodham (R.R. 1)	F. 1916	1
Scotch Bobble	15754	3898	Clyde.	4389	1912	G. W. Gibson	Wroxeter	F. 1918	1
Direct Hal Jr.	0166	5261	St. Br.	5905	1904	John Baker & R. T. Dunlop	Zurich	S. 1919	1
Ledoro	2196	2702	St. Br.	3064	1909	John Baker	Zurich	F. 1916	1
The Great War McKinney	2889	5175	St. Br.	5650	1915	E. Bossenberry & J. N. Cantin	Zurich, Box 293	S. 1918	1*
Southport (imp.)	347	806	Shire	1758	1899	William Callfas	Zurich	F. 1914	1
Non Parole	840	624	St. Br.	1463	1900	Michael Kennel	Zurich	F. 1914	1
King's Own 4th	18570	5462	Clyde.	6080	1916	Wm. McAllister & Sons	Zurich	S. 1919	1

KENT COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Regal Chattan	9642	41	Clyde.	41	1909	Elam Hind	Bear Line	S. 1917	1
Courbide	775	4604	Per.	4035	1906	Levi Tetrault	Bear Line	F. 1914	1
Brilliant	779	1643	Per.	2493	1901	Rufus Earl	Blenheim	S. 1916	1
Correct	3609	2951	Per.	1890	1906	John Marshall	Blenheim	F. 1914	1
Earl Fife (imp.)	11581	1250	Clyde.	2030	1908	David McLeod	Blenheim	F. 1916	1
Gearing Boy	1363	3316	St. Br.	3514	1910	Sparham Brothers	Blenheim (R.R. 2)	F. 1918	1
Baron Blenheim	21580	5425	Clyde.	6058	1917	Fred. A. Thompson	Blenheim	S. 1919	1
Prodigo	1877	4481	St. Br.	4942	1913	Freeman Truax	Blenheim	S. 1919	1
Walpole Lad	8836	405	Clyde.	603	1907	F. J. Baynton	Bothwell (R.R. 2)	F. 1914	1
Amiral (imp.)	3611	1757	Per.	28	1903	Henry Brewer	Bothwell	F. 1912	1
Lambton King	19476	5426	Clyde.	6060	1916	Harvey McAlpine	Bothwell (R.R. 2)	S. 1919	1
Hartland's Favorite	5727	3023	Clyde.	27	1905	A. H. Patterson	Bothwell	F. 1914	1
Aikman	21291	5447	Clyde.	6065	1916	Fred Sullivan	Bothwell (R.R. 4)	S. 1919	1
Libidineux (imp.)	3854	2872	Per.	3383	1911	Reuben Brend	Chatham (R.R. 6)	S. 1918	1
Ixode (imp.)	3141	1371	Per.	2333	1908	James Downie	Chatham	S. 1917	1
King of Riverside	21171	5408	Clyde.	6016	1917	Arthur Gordon	Chatham	S. 1919	1
Duke of Carruchan	16429	4771	Clyde.	5366	1914	James Gordon	Chatham	S. 1919	1
Grand Allerton	716	32	St. Br.	6	1905	John Hales	Chatham	F. 1914	1
Normand	3510	4289	Per.	4040	1912	McGarvin Brothers	Chatham	F. 1918	1
Alto Dewey	935	2724	St. Br.	3193	1907	D. McLachlan	Chatham	F. 1914	2

College King	028	2832	St. Br.	3311	1899	D. McLachlan	Chatham	F. 1914	1
Gearing	918	1756	St. Br.	29	1900	John Turner	Chatham	F. 1912	1
Earl Kitchener	1356	5463	Shire	6087	1917	Dell Drury	Charing Cross	S. 1919	1
Black Porte	1896	3103	Per.	2156	1909	James R. Cook	Coatsworth	F. 1916	1
Robin Adair	19883	5461	Clyde.	6059	1917	W. J. Sinclair	Croton	S. 1919	1
Black Knight	20860	5268	Clyde	5902	1916	Morris Brooks	Croton	S. 1919	1
King Junior (imp.)	1068	2857	Shire	2642	1908	Johnston Brothers	Croton	F. 1917	A1
Prince Charles of Lambton	1220	4738	Shire	5156	1914	Johnston Brothers	Croton	F. 1918	1
Baron Lomond (imp.)	8430	1909	Clyde.	2277	1905	Wood Brothers	Croton	S. 1919	2
Royal Major	13590	3305	Clyde.	2452	1911	John Campbell	Dresden	F. 1917	2*
GoGo (imp.)	1581	403	Per.	596	1906	Garnet J. Delve	Dresden	F. 1914	1
Dashing King (imp.)	6099	1464	Clyde.	2139	1904	Joseph Elgie	Dresden	F. 1914	1
Jess Willard	2503	5203	St. Br.	5687	1915	John Hooper	Dresden	S. 1918	1*
Archer	3300	1318	Per.	1894	1910	David L. Gardiner	Merlin	F. 1917	1*
Livingstone	5481	5109	Per.	5628	1915	J. L. B. Gardiner	Merlin	S. 1918	1*
Baron Hillbrae 2nd	11033	1153	Clyde.	358	1910	David Hall	Merlin	S. 1918	1
Prestwick Freeman (imp.)	6081	2985	Clyde.	2064	1904	Alex. Houston	Merlin	S. 1915	1
Jouy (imp.)	3821	3104	Per.	3420	1909	Ferguson Brothers	Muirkirk	F. 1916	1
Kaboulot (imp.)	3079	1285	Per.	2001	1910	J. G. Pinder	Mull	F. 1917	1
Marchfield Baron (imp.)	8432	868	Clyde.	1637	1904	George Ball	Northwood	F. 1914	1
Mark B.	8970	5331	Per.	5982	1915	Matthew E. Miller	Northwood	S. 1919	1
Joseph	3561	1905	Per.	2431	1910	Napoleon Caron	Paincourt	S. 1919	1
Oaklands Glory	17414	5219	Clyde.	5528	1915	J. H. Lampman	Palmyra	F. 1917	1*
Dukane	2436	5397	St. Br.	6029	1913	H. W. Lumley	Ridgetown	S. 1919	1
Sunbeam Junior	15159	2831	Clyde.	3323	1911	Alvin Murray	Ridgetown	F. 1917	1*
Lloyd George	823	626	St. Br.	1	1908	R. C. Coates	Thamesville	F. 1916	1
Kerjolla	1341	3075	St. Br.	3540	1911	Cryderman & Ferguson	Thamesville	F. 1918	1
Letanna S.	2046	4592	St. Br.	4988	1912	H. H. Laird	Thamesville	S. 1918	1*
Goldring Jr.	6744	310	Mor.	38	1898	John Mowbray	Thamesville	F. 1912	1
Royalist of Drumlanrig (imp.)	12584	1167	Clyde.	1406	1909	Selton Clydesdale Co.	Thamesville	S. 1917	1
Baron of Fife (imp)	18111	5200	Clyde.	5692	1915	Thos. Wootton	Thamesville (R.R. 3)	S. 1918	1*
Brown Gem	805	1070	St. Br.	355	1905	Andrew Barnier	Tilbury	F. 1914	1
Voltaire	8302	5290	Per.	5873	1914	George Cottingham	Tilbury	F. 1918	A1
Wildbrino Jr.	2135	2561	St. Br.	2025	1898	Henry Trudel	Tilbury	F. 1914	1
Jours (imp.)	4013	4499	Per.	4431	1909	Richard Rosebrugh	Turnerville	F. 1916	1
King Peter	4569	5020	Per.	5138	1914	Geo. Buckingham	Wallaceburg	F. 1918	1
Kodi (imp.)	4462	3941	Per.	4170	1910	John Buckingham	Wallaceburg	F. 1918	A1
Baron O'Brogie	13985	549	Clyde.	1599	1910	Charles Harrett	Wallaceburg	S. 1917	1
Charles Derby Jr.	900	1096	St. Br.	605	1904	Louis Jackson	Wallaceburg	F. 1912	1
Roubaix	4108	4315	Per.	4911	1913	J. G. Renwick & Sons	Wheatley	F. 1917	1*
Harrison (imp.)	1391	1483	Per.	2445	1907	Herman Smith	Wheatley	F. 1914	1

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LAMBTON COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Lothian's Brand (imp.)	10083	1693	Clyde.	1886	1903	Gordon White	Alvinston	F. 1914	1
King's Frolic (imp.)	12586	1307	Clyde.	1944	1910	W. B. Annett	Alvinston	S. 1917	1*
Dunure David (imp.)	13674	1256	Clyde.	2018	1910	Wm. D. Benstead	Alvinston	F. 1918	A1
Lauriston Pride (imp.)	11801	1393	Clyde.	2301	1905	Wm. D. Benstead	Alvinston	S. 1913	1
Airdlie Dix (imp.)	12611	1798	Clyde.	2204	1909	Campbell Brothers	Alvinston	F. 1916	1
Lord of Fife	14843	1479	Clyde.	2375	1909	Campbell Brothers	Alvinston	F. 1916	1
Berlu	7485	5431	Per.	6037	1917	H. A. Gilroy	Alvinston	S. 1919	1
Oro Gilroy	1637	3735	St. Br.	4095	1911	H. A. Gilroy	Alvinston	S. 1918	1
Laddie Cairnton	18848	5350	Clyde.	5962	1916	James Hand	Alvinston	S. 1919	1
Alvinston	1953	4556	St. Br.	5043	1914	W. A. McLean	Alvinston	S. 1919	1
High Ross	897	1341	St. Br.	1374	1903	J. B. McCool	Arkona	S. 1914	1
Gulf Stream Heir	19144	5065	Clyde.	5561	1916	John F. Burr	Brigden	S. 1918	1*
Parkside Major	877	437	Shire	842	1909	John F. Burr	Brigden	F. 1916	1
Viscount Tynedale (imp.)	11881	424	Clyde.	742	1906	Geo. Nicol	Brigden	F. 1914	1
Prince of Lambton	17246	5064	Clyde.	5544	1914	Byron Stephens	Brigden	S. 1918	1*
Canadian Prince	10763	2972	Clyde.	1021	1908	Frank Holling	Camlachie	F. 1916	1
Baron Shamrock	20503	5299	Clyde.	5922	1915	James Montgomery	Camlachie	S. 1919	1
Waxwork Jack	1374	5339	Shire	5921	1916	Thos. Wright	Camlachie	S. 1919	1
Radiguil Jr.	4354	3363	Per.	3796	1907	Jerry & Leo Bedard	Courtwright	F. 1914	1
Sagamore's Heir	21440	5381	Clyde.	6015	1916	John Dalton	Edy's Mills	S. 1919	1
King's Mint (imp.)	13176	1165	Clyde.	1482	1907	Henry Mawlam	Florence	F. 1914	1
Aurelian (imp.)	18325	4696	Clyde.	5130	1912	Brandon Brothers	Forest	F. 1918	A1
Baron Currie (imp.)	7734	608	Clyde.	715	1902	Brandon Bros. & Kingston	Forest	F. 1912	1
Baron Gartly (imp.)	4789	83	Clyde.	549	1900	Brandon Brothers	Forest	F. 1912	1
Blacon's Son	20869	5272	Clyde.	5889	1916	Brandon Brothers	Forest	F. 1918	A1
Eastfield Charles	19762	5079	Clyde.	5629	1915	Brandon Brothers	Forest	S. 1918	1*
Rosyth (imp.)	18326	4697	Clyde.	5131	1914	Brandon Brothers	Forest	F. 1918	1
Voltaire	8971	5329	Per.	5980	1916	Fraleigh & Shannon	Forest	S. 1919	1
Gay Pride	17446	4867	Clyde.	5318	1915	William Gilliard	Forest	F. 1918	1
Baron Revolt	17471	4730	Clyde.	5132	1915	A. Watson & Sons	Forest	F. 1918	1
Sir Baron Mac	19898	5435	Clyde.	6054	1916	Arthur Watson & Sons	Forest	S. 1919	1
Major Senser	1340	3036	St. Br.	3542	1902	John W. Johnston	Inwood	F. 1914	1
Lord Oswald (imp.)	8671	54	Clyde.	327	1907	James T. Smillie	Inwood	F. 1914	1
Pride of Warwick	12119	829	Clyde.	1921	1910	Bert Cruickshank	Mooretown	F. 1918	1
General Joffre	20453	5119	Clyde.	5651	1916	Albert Bass	Oil City	S. 1918	1*
Branton Junior	20625	5254	Clyde.	5351	1914	W. J. Troth	Oil City	F. 1918	1
Bute Darnley (imp.)	10348	1431	Clyde.	2104	1908	Trott Brothers	Oil City	F. 1916	1
Bailey	1217	4857	Shire	5311	1914	Thomas Bailey	Oil Springs (R.R. 3)	F. 1918	1

Bombie's Footprint	14247	2882	Clyde.	3457	1912	Wm. R. Bridges	Oil Springs	S. 1919	1
Prince Ronald (imp.)	5367	2072	Clyde.	2728	1903	Thos. Naylor	Oil Springs	F. 1914	2
Porta	1887	4548	St. Br.	4927	1913	Thos. H. Eady	Petrolia	F. 1917	1*
Tanton	1206	2959	St. Br.	3507	1911	Walter Fisher	Petrolia	S. 1919	1
Grandeur's Heir	2838	3489	Clyde.	2620	1900	Amos Kerr	Petrolia	F. 1914	1
Jack Wilson	2016	1042	St. Br.	1020	1908	J. W. Kerr	Petrolia	F. 1916	1
Sagamore	14983	3319	Clyde.	3774	1910	Maw & Marshall	Petrolia	F. 1918	1
Erl Pride	21424	5375	Clyde.	5992	1916	Wilbert Napper	Petrolia	S. 1919	1
Hillhead King (imp.)	15478	2957	Clyde.	3488	1911	Geo. S. Silk	Petrolia	F. 1918	1
St. Patrick	2862	567	Per.	388	1900	William Barnes	Sarnia	F. 1912	1
Kanrobert (imp.)	9427	5452	Per.	6066	1910	James Brothers	Sarnia	S. 1919	1
Sir Robert L.	1827	4399	St. Br.	4866	1913	W. H. Haney	Sarnia	F. 1917	1*
King Easy (imp.)	7853	728	Clyde.	1024	1906	D. W. James	Sarnia	F. 1914	1
Alvada	9325	5442	Per.	5997	1916	Neil Maitland	Sarnia	S. 1919	1
Togo B.	872	566	St. Br.	356	1906	Dan McKellar	Sarnia	S. 1915	1
Nello	1941	2554	St. Br.	119	1907	Edward Powers	Sarnia (R.R. 3)	S. 1916	1
Darrien	377	3976	St. Br.	4055	1908	Bert Price	Sarnia	F. 1916	1
Rattler Jr.	7817	5389	Per.	5912	1916	John E. Dupuis	Sombra	S. 1919	1
Inca MacGregor	14404	4262	Clyde.	4726	1912	William Rumford	Thedford	F. 1918	1
Herbier (imp.)	2202	278	Per.	1025	1907	David Shannon & Co.	Wanstead	F. 1914	1
Jurot (imp.)	8949	5432	Per.	6051	1909	Robert Campbell	Watford (R.R. 2)	S. 1919	1
Millcraig Duke (imp.)	15669	3026	Clyde.	2498	1904	Robert Campbell	Watford	F. 1914	1
John Whitley	1813	4478	St. Br.	4936	1914	Gordon Hollingworth	Watford	S. 1918	1*
Baron's Jim	8488	66	Clyde.	1010	1906	William P. Reid	Watford	F. 1914	1
The Distinct	2632	5070	St. Br.	5626	1915	Thos. Roche	Watford	S. 1918	1*
Urbain (imp.)	1591	3542	Per.	2534	1905	David Skillen	Watford	S. 1914	1
Major	6146	4883	Per.	5412	1913	A. Westgate	Watford (R.R. 4)	F. 1918	2
McKinney Coast	1011	2143	St. Br.	2525	1904	Henry Zavitz	Watford	S. 1915	1
Prince Albert	1198	4382	Shire	4792	1913	F. Pretty	Wilkesport	F. 1917	1*
Diana's Chief (imp.)	14446	874	Clyde.	1652	1906	Chas. King	Wyoming (R.R. 1)	F. 1914	2
King George	11844	1689	Clyde.	2050	1909	Hugh Montgomery	Wyoming	S. 1916	1

LANARK COUNTY.

Baron Gibson	14478	3247	Clyde.	673	1910	Wm. J. Graham	Almonte	F. 1918	1
Baron McGregor	20296	5221	Clyde.	5863	1916	W. R. More	Almonte (R.R. 2)	F. 1918	1
Gartly Pride 2nd	16181	4173	Clyde.	4654	1911	W. R. More	Almonte (R.R. 2)	F. 1918	A1
Lord Kitchener	20865	5229	Clyde.	5860	1916	G. & W. Paterson	Almonte	F. 1918	1
Elrig of Kenmore	17429	4895	Clyde.	5271	1915	John Stewart	Appleton	F. 1918	1
Cashel Lad	12775	1934	Clyde.	2412	1911	W. A. Nichols	Carleton Place	F. 1918	A1
Perth's Hero	12824	643	Clyde.	666	1909	William Anderson	Franktown	F. 1916	1

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LANARK COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Taft	9071	5415	Per.	5913	1912	William Kidd	Franktown	S. 1919	A1
Pride of Dunmore	8014	5417	Per.	5990	1917	John A. McDougall	Hopetown	S. 1919	1
Pioneer	7929	407	Clyde.	643	1906	Thos. A. Conroy	Lanark	F. 1914	1
Aeroplane	591	1137	Hack.	2000	1908	Arthur Burchell	Merrickville	S. 1917	1
Belmont	9811	823	Clyde.	1906	1908	Pierce Murphy	Merrickville	F. 1916	1
Mono Prince	601	4981	St. Br.	5443	1911	J. O. Allan	Perth	F. 1918	2
Anthony Waterer	376	684	Shire	1705	1902	Alfred Cavanagh	Perth (R.R. 6)	F. 1914	1
Carnation	10569	820	Clyde.	1892	1909	Alfred Cavanagh	Perth (R.R. 6)	F. 1916	1
Tom Millerton	721	4052	St. Br.	4517	1907	T. J. Devlin	Perth	S. 1915	1
Concord Mac	10413	4545	Clyde.	5019	1907	T. J. Devlin	Perth	S. 1916	1
Johnnie Canuck	16031	1829	Clyde.	16	1902	J. H. Ebbs	Perth	F. 1912	1
King of Quality	6086	5097	Clyde.	5632	1904	John A. Ebbs	Perth	S. 1918	1
Hoqueton (imp.)	1558	543	Per.	376	1907	Thos. H. Ireton	Perth	F. 1914	1
Rudgate Squire (imp.)	1052	2108	Shire	2779	1910	John Johnston	Perth	F. 1918	1
Monomaniac	242	347	St. Br.	662	1902	John A. Kerr	Perth	F. 1912	1
Syndic Chief	14099	1316	Clyde.	1902	1909	Peter King	Perth (R.R. 5)	S. 1919	1
Patron (imp.)	595	1130	Bel. Dr.	2161	1910	Jas. L. P. McLaren	Perth	F. 1918	1
Baron Killarney	13366	3738	Clyde.	3719	1911	William McLaren	Perth	F. 1918	1
Judge Red	411	2756	St. Br.	6058	1900	McMillan Brothers	Perth	F. 1912	1
Border Laird (imp.)	7301	1274	Clyde.	2073	1904	M. McMullen	Perth	F. 1914	1
Emblesy Chief	19130	5337	Clyde.	5783	1916	M. McMullen	Perth	F. 1918	1
Kosaque (imp.)	3255	1380	Per.	2346	1910	M. McMullen	Perth	F. 1918	2
Brooklin Chief	16577	4384	Clyde.	4795	1913	W. A. Bisonette	Smith's Falls	F. 1917	1*
Dalton King Jr.	791	4982	Hack.	5225	1914	Harry Best	Smith's Falls	S. 1919	1
Blantyre	11612	1892	Clyde.	2645	1910	T. A. Campbell	Smith's Falls	S. 1919	1
General Botha	1818	5453	St. Br.	6036	1915	Jas. L. Davis	Smith's Falls	S. 1919	1
Brown Acme	13613	3801	Clyde.	4424	1912	John McEwen	Smith's Falls	S. 1919	1
Bird Peter	1868	4416	St. Br.	4810	1908	Phillips Brothers	Smith's Falls	S. 1916	1
Dappledale Chief	14280	4174	Clyde.	4651	1912	Thos. Scott	Smith's Falls	F. 1918	2
Confidence (imp.)	14958	3862	Clyde.	4409	1912	Richard Willis	Smith's Falls	S. 1919	1
Jess Willard	810	4729	Hack.	5250	1915	Robert Wills	Smith's Falls	F. 1918	1
Baron's Heir	12148	1992	Clyde.	78	1910	W. J. Jones	Waba	S. 1917	1
Curiosity	17029	4807	Clyde.	5248	1914	Duncan Cameron	Wemyss	F. 1918	1

LEEDS COUNTY.

Kazak (imp.)	3764	3052	Per.	3546	1910	W. H. Comstock (Estate)	Brockville	S. 1919	1
Peter Baron	2217	5451	St. Br.	6072	1916	Proctor Griffin	Brockville	S. 1919	1
Generalissimo	1304	2844	St. Br.	3320	1904	Proctor Griffin	Brockville	F. 1914	1
Justo the Great	1988	4591	St. Br.	4980	1913	Proctor Griffin	Brockville	F. 1917	1*
Prince Dodge Ruby	17768	4580	Clyde.	4993	1911	Jas. Pearson & Son	Brockville	F. 1918	2
Sidney (imp.)	3582	1172	Per.	1193	1898	Jas. Pearson & Son	Brockville	F. 1912	1
Sundown	575	1415	Shire	2310	1908	J. C. Eyre	Chantry	S. 1917	1
Pap Larabie	1052	2418	St. Br.	1077	1900	J. A. Munro	Cornwall	F. 1914	1
Bright Guard (imp.)	13410	3999	Clyde.	4199	1910	Adam Scharfe	Cummings Bridge	F. 1918	A1
Prince Harmony	5851	578	Clyde.	236	1904	W. Gibson	Gananoque	F. 1912	1
Idalion	3917	3942	Per.	4438	1912	Albert Goff	Gananoque	F. 1918	1
Gautelet (imp.)	1525	1166	Per.	1469	1906	Anson Richardson	Gananoque	S. 1915	1
Baron Kirkcowan (imp.)	11679	1321	Clyde.	1867	1908	Melvin Logan	Rock Springs	F. 1916	1
Northland Baron	5848	316	Clyde.	139	1905	Jos. Gainford	Seeley's Bay	S. 1915	1
Lord MacGregor 2nd	16376	4740	Clyde.	5229	1914	Wm. Hughes	Toledo	F. 1918	1
Sir Laird	17554	5041	Clyde.	5516	1915	Jas. A. Whitmore	Toledo	F. 1917	1*
Bonar Law	2935	4877	St. Br.	5221	1912	D. A. Curtis	Westport	F. 1918	1
Eagle Patch	2072	4684	St. Br.	5104	1913	W. C. Fredenburgh & D. A. Curtis	Westport	F. 1918	1
Gold Hal	030	36	St. Br.	92	1902	Grant & Jordan	Westport	F. 1912	1
Hurleur (imp.)	1599	1081	Per.	2	1907	John F. Mulville	Westport	F. 1917	A1
Plum Brooks	2970	5474	St. Br.	6100	1902	Jas. E. McCann	Westport	S. 1919	1

LENNOX AND ADDINGTON.

Prince Cairndale	13649	1388	Clyde.	58	1910	Asa A. Armstrong	Adolphustown	F. 1918	2
La Premiere (imp.)	1356	443	Per.	888	1907	Anson McKeown & Joe Cavanagh	Centreville	F. 1914	1
Rommay (imp.)	4094	1191	Per.	1286	1900	John Pickens	Erinsville	F. 1912	1
Sir John Simpson (imp.)	10910	3074	Clyde.	3251	1908	John Stinson	Erinsville	S. 1917	1
Grey Squirrel	1459	150	Per.	769	1909	Geo. S. Chambers (Estate)	Napanee	F. 1916	1
Captain Joe	4878	5266	Per.	5724	1915	C. W. Hambly	Napanee	S. 1919	1
Karcan (imp.)	3823	3468	Per.	3590	1910	Chauncy W. Masters	Napanee	S. 1919	2
George Mason	15705	2935	Clyde.	3375	1910	John McCumber	Napanee	S. 1917	1
Ross McGregor	15203	4042	Clyde.	4258	1912	Herbert J. McNeely	Napanee	F. 1918	1
Sir Donald's Pride	13030	1423	Clyde.	1662	1910	Arthur Murphy	Napanee	F. 1917	1
Cheri (imp.)	3741	1936	Per.	2091	1902	W. H. Preston & A. E. Howard	Stella	S. 1913	1
Prince George	10936	2042	Clyde.	2820	1909	John Finn	Tamworth	F. 1916	1
Justin (imp.)	3057	1085	Per.	1568	1909	Wellington Murphy	Yarker	F. 1916	1

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LINCOLN COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth	Name of Owner.	Address.	Date of Insp.	Form of Cert.
The Laird	13961	137	Clyde.	710	1909	Stanley Young	Caistor Centre	F. 1916	1
Baron Kelton (imp.)	7916	470	Clyde.	1052	1907	Albert Speck	Jordan	F. 1918	1
Glenleith of Larkin Farm	16935	5025	Clyde.	5140	1914	William Crawford	Niagara-on-the-Lake	F. 1918	1
Dustless McKinney	2187	5458	St. Br.	6077	1907	J. B. Merritt	Smithville	S. 1919	1
Karlos (imp.)	3820	3225	Per.	3618	1910	Morley M. Merritt	Smithville	S. 1919	1
Goble	1386	1377	St. Br.	2225	1905	I. E. Springstead	Smithville	F. 1914	1
Wilkoe	2776	5252	St. Br.	5845	1908	Albert A. Devlin	St. Catharines	F. 1918	1
Blacon of Up to Time	12446	2945	Clyde.	3510	1911	J. Bligh Hostetter	St. Catharines	F. 1918	1
Ithamar	2227	4731	St. Br.	5293	1914	T. A. Crow	Toronto	S. 1919	1
						J. E. Swartz (Mgr.)	St. Catharines.		
Prince Glancine	3113	689	Per.	876	1910	J. H. Middlefehldt	Wellandport	F. 1918	1

MIDDLESEX COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Black Baronet (imp.)	10350	1168	Clyde.	999	1908	Chas. Bean & Sons	Ailsa Craig	F. 1916	2
Hall Caine (imp.)	13933	2087	Clyde.	2813	1909	Chas. Bean & Sons	Ailsa Craig	F. 1916	1
King's Courtier (imp.)	12556	2070	Clyde.	2694	1910	Henry McClurg	Ailsa Craig	F. 1918	1
Branton Surprise (imp)	10349	438	Clyde.	845	1907	Alex. F. McTavish & Son	Appin (R.R. 2)	F. 1914	1
Royal Dennis	16364	4551	Clyde.	4975	1913	Richard Pettit	Appin	F. 1917	1*
Prince of Roxborough 2nd	15958	1213	Clyde.	2095	1909	E. G. Legge	Belmont	F. 1916	1
Jelly's Favourite	18941	4786	Clyde.	5306	1914	George Weir	Belmont (R.R. 1)	F. 1918	1
Labour (imp.)	3853	2919	Per.	3472	1911	John D. McGregor	Byron	F. 1918	2
Bright Star	11536	2060	Clyde.	2486	1907	Currie Brothers	Denfield	F. 1914	1
Cawdor Laird (imp.)	11455	1830	Clyde.	2024	1907	Arthur F. O'Neil	Denfield	F. 1914	2
Sidon	4725	1810	Ger. Co.	2380	1905	H. T. Rigney	Denfield	F. 1914	1
Golden Glow	11275	1918	Clyde.	1809	1909	James Gilbert	Glencoe	F. 1916	1
Imperial Royal	2673	494	Per.	1352	1905	W. W. Gordon	Glencoe	F. 1914	2
Dillard Payne	0154	5069	St. Br.	5625	1906	Robt. McAlpine	Glencoe	S. 1918	1
Blackband (imp.)	6194	25	Clyde.	1313	1901	D. K. McRae	Glencoe	F. 1914	1
Ascot's Heir (imp.)	9646	2380	Clyde.	763	1904	Morley Wass	Granton	F. 1914	1
Gladiator 2nd	17237	4348	Clyde.	4791	1913	A. M. Dickie	Hyde Park	F. 1917	1*
Morris	9327	5441	Per.	1523	1915	Albert Kennedy and Colin McKeigan	Ilderton	S. 1919	1
King's Court	19050	4882	Clyde.	5397	1915	John McIntosh	Ilderton (R.R. 2)	F. 1918	1
Oaklands Favourite	13698	3527	Clyde.	3610	1912	G. E. Nixon	Ilderton	S. 1919	2
Jock Revolt	20823	5324	Clyde.	5773	1916	O. R. Demaray	Kerrwood	F. 1918	2
Glen McQueen	17439	5066	Clyde.	5562	1915	Robt. Denning	Kerrwood	S. 1918	1*
Billy Boy	15753	3105	Clyde.	3562	1911	B. D. Sells	Komoka	F. 1918	1

Victor (imp.)	9428	4443	Per.	4027	1901	Alex. D. Jackson	Lambeth	F. 1914	1
Wild Mayo (imp.)	London	4679	Hunter	5099	1904	Adam Beck	London	S. 1916	1
Dunure Friendship (imp.)	13675	1252	Clyde.	2022	1911	Wilkinson & Guest	London (R.R. 5)	F. 1918	1
Kothorne (imp.)	3004	518	Per.	559	1910	Wilkinson & Guest	London	F. 1918	1
Matchless McKinney	1137	2789	St. Br.	1133	1905	Johnston Brothers	London	S. 1915	1
Medio McKinney	1138	2790	St. Br.	1134	1906	Johnston Brothers	London	F. 1914	1
The Governor General	899	3778	St. Br.	1118	1909	Johnston Brothers	London	F. 1916	1
Bob L.	8966	5325	Per.	5976	1914	Lafayette Stock Farm Co. of Canada, Limited	London	S. 1919	1
Butler Burgogue	1925	5336	Bel.	5987	1913	Lafayette Stock Farm Co.	London	S. 1919	1
Col. Erick	1924	5334	Bel.	5985	1916	Lafayette Stock Farm Co.	London	S. 1919	2
Francisco 2nd	8969	5330	Per.	5981	1913	Lafayette Stock Farm Co.	London	S. 1919	1
Hercules	1922	5333	Bel.	5984	1914	Lafayette Stock Farm Co.	London	S. 1919	1
Hercules 2nd	1921	5335	Bel.	5986	1915	Lafayette Stock Farm Co.	London	S. 1919	1
Tango	8967	5326	Per.	5977	1914	Lafayette Stock Farm Co.	London	S. 1919	1
Zeppelin	8968	5328	Per.	5979	1915	Lafayette Stock Farm Co.	London	S. 1919	1
Hindenburg	1816	4916	St. Br.	5264	1914	Robt. & Ben. Pierce	Longwood	F. 1918	1
Duke of Orford	8630	550	Clyde.	43	1908	T. F. Hardy	Melbourne	F. 1916	1
Black Knaught	14261	1935	Clyde.	2192	1910	Duncan A. McLean	Melbourne	F. 1918	2
Dell Heart	1705	4724	St. Br.	5144	1914	George Pike	Mossley	F. 1918	1
Emerald (imp.)	14658	2328	Clyde.	2999	1908	A. Rossiter	Mossley	F. 1916	1
Toupet (imp.)	1066	1179	Per.	10	1905	J. H. Thompson	Mt. Brydges	F. 1914	1
John Chattan	20317	5349	Clyde.	5945	1915	John K. Read	Newbury (R.R. 3)	S. 1919	1
Grattan Royal	2877	5292	St. Br.	5907	1908	Chas. Barrett	Parkhill	S. 1919	1
Woodlands Performer	68	2156	Hack.	1061	1896	Hugh W. Brown	Parkhill	F. 1912	1
Lord Gray (imp)	12390	67	Clyde.	1007	1910	Andrew Erskine	Parkhill	F. 1917	A1
John D.	6163	4767	Per.	5331	1908	D. A. Graham	Parkhill	S. 1917	1
Dunrobin Darnley	11146	2907	Clyde.	1703	1909	Percy Graham	Parkhill	S. 1916	1
Kif-Kif (imp.)	3760	3236	Per.	3710	1910	D. R. McKenzie & J. W. & H. A. Ross	Parkhill	F. 1918	1
Sir Simon Romeo	16919	4083	Clyde.	4612	1912	J. D. McPhee	Parkhill	F. 1918	A1
Dunure Link (imp.)	13042	1091	Clyde.	729	1902	William Ross, Jr.	Parkhill	F. 1912	1
Eel of the Nile	2026	4666	St. Br.	5082	1913	A. G. Shortt	Parkhill	S. 1918	2*
Lord Rennie (imp.)	8915	1453	Clyde.	2210	1906	Wilson Brothers	Parkhill	F. 1914	1
Gatignol (imp.)	1127	118	Per.	781	1906	Elwood Zavitz	Poplar Hill	F. 1914	1
Mamaluke (imp.)	14299	1431	Clyde.	2058	1908	Elwood Zavitz	Poplar Hill	F. 1916	1
King of the Dale	520	2994	St. Br.	3512	1911	J. W. Galsworthy	Strathroy	F. 1918	1
McIntosh Best	17877	4098	Clyde.	4497	1912	McIntosh Brothers	Strathroy	F. 1918	1
Aldino	2656	5177	St. Br.	5655	1909	Colin McKeigan	Strathroy	S. 1918	1
Gros-Bec (imp.)	1554	2739	Per.	346	1906	Colin McKeigan	Strathroy	F. 1914	1
Joffre	9326	5473	Per.	6027	1916	Colin McKeigan	Strathroy	S. 1919	1

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MIDDLESEX COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Cerus (imp.)	30	1650	Per.	2605	1900	Archibald Pedden	Strathroy	F. 1914	1
All Belsire	2596	5044	St. Br.	5558	1915	Walter Riddell	Thorndale	S. 1918	1*
Baron of Vimy Ridge	20591	5182	Clyde.	5690	1916	Chas. Weston	Thorndale	S. 1918	1*
Unko	183	2265	St. Br.	2894	1905	P. J. Kearns	Wardsville	S. 1914	1
Dunure Acknowledgment (imp.)	8457	1385	Clyde.	1113	1906	Robert Brown	Wilton Grove (R.R. 1)	F. 1914	1
Drefus	3282	498	Per.	1409	1898	Donald B. Campbell	Walkers (R.R. 2)	F. 1914	1

NORFOLK COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Baron Blacon (imp.)	6509	3090	Clyde.	340	1905	Wm. Payne & Geo. Williams	Frogmore	F. 1914	1
Pride of Columbie	11547	674	Clyde.	98	1909	Wm. Balcom	Langton	S. 1917	1
Carenot (imp.)	14657	2327	Clyde.	2946	1908	John Cameron	Langton	F. 1916	1
Royal George	4698	4142	Per.	4600	1912	John H. Wheeler	Lyndoch	F. 1918	1
Sir Sam	5506	4733	Per.	5137	1914	Archibald M. Collver	Nixon (R.R. 1)	F. 1918	1
Cadet (imp.)	1600	2954	Per.	607	1905	Ed. Meredith & J. E. Blayney	Nixon	S. 1915	1
Argyle Acme	20496	5206	Clyde.	5675	1914	George Cockrell	Scotland (R.R. 1)	S. 1918	1*
Baron Howes	7791	3281	Clyde.	520	1905	W. C. Everett	Simcoe	F. 1914	1
Haimon	1600	2616	Ger. Co.	2450	1904	John Law & Wm. Veit	Simcoe	S. 1915	1
Juvenil (imp.)	3055	5076	Per.	5588	1909	Milton Porter	Simcoe	F. 1918	A1
Metallis King	465	15	St. Br.	1349	1903	K. A. Shaw	Simcoe	S. 1914	1
King's Chocolate (imp.)	342	2177	Hack.	2919	1904	A. Yeager	Simcoe	S. 1915	1
Overton Prince	734	4169	Hack.	4075	1912	A. Yeager	Simcoe	F. 1917	A1*
Magendia Tramp	3731	2447	Per.	725	1898	G. W. Ayers	St. Williams	F. 1914	2
Halaska (imp.)	1598	398	Per.	1373	1907	Willson Fry	St. Williams	S. 1916	2
Marshal Haig	18827	4577	Clyde.	5332	1915	J. W. Sanders	Tillsonburg	F. 1918	1
Bonniere	3105	4303	Per.	4790	1912	Louis Beemer	Waterford	F. 1917	1*
Cratere (imp.)	1059	2416	Per.	2968	1905	Louis Beemer	Waterford	F. 1918	A1
Willchester	4869	5244	Per.	5848	1915	Louis Beemer	Waterford	F. 1918	1
Clodion	3648	2189	Per.	1047	1907	J. R. Irwin	Waterford	F. 1914	2
Petrograd	4933	5030	Per.	5142	1915	Jas. R. Irwin	Waterford	F. 1918	1
Prince of Triumph	17293	5353	Clyde.	6001	1915	Emerson Pickell	Waterford	S. 1919	1

NORTHUMBERLAND COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
King's Purser (imp.)	9905	497	Clyde.	1391	1907	Barney James	Baltimore	S. 1916	1
Royal Vaillant	3869	5465	Per.	6068	1917	W. T. Fritz	Brighton	S. 1919	1
Noteworthy B.	2485	5037	St. Br.	5579	1905	H. D. Bennett	Campbellford	S. 1918	1

Baron's Choice	9357	617	Clyde.	892	1907	H. G. Bertrand	Campbellford	F. 1914	1
Craigie Junior	17080	4358	Clyde.	4833	1914	Alfred Merrell	Campbellford	F. 1917	1*
MacInnes 2nd	4098	2659	Clyde.	3031	1901	George Stanbury	Campbellford	S. 1914	1
Bricanam	6565	5062	Per.	5527	1915	D. J. Arkles & I. C. Anderson	Castleton	F. 1917	A1*
Nydo	2021	4508	St. Br.	4880	1914	Andrew Peters	Castleton	F. 1917	1*
Craigie Banner (imp.)	13759	1599	Clyde.	1228	1910	Edward Budd	Cobourg	S. 1919	1
Kingship	855	4338	Thor.	4742	1907	Lily A. Livingston	Cobourg	S. 1916	1
Stanhope 2nd (imp.)	140	2230	Thor.	1606	1899	Lily A. Livingston	Cobourg	S. 1915	1
Jimmie Glen	17426	4844	Clyde.	5406	1913	C. J. McCarthy	Cobourg (R.R. 6)	S. 1919	1
Ned Fenelon	5683	4718	Per.	5181	1914	Frank Pillsworth	Cobourg	F. 1918	1
Arthur King	1211	3904	St. Br.	4289	1911	Chas. F. Pettifer	Codrington	S. 1919	1
Royal Prince	8951	2610	Clyde.	3292	1908	Reuben S. Waite	Colborne	S. 1915	1
Robert Montrave	20265	5205	Clyde.	5674	1915	Thos. Boyle	Fenella	S. 1918	1*
Dunure Dan	16530	4843	Clyde.	5355	1912	Robt. Carstairs	Fenella	S. 1919	1
Glenavon	11467	3166	Clyde.	3427	1907	Robt. Carstairs	Fenella	S. 1916	1
Prince Edward	10860	2852	Clyde.	3047	1909	Jas. Gunter	Frankford	S. 1916	1
Baron Audubon	757	659	St. Br.	1371	1905	Wm. Knight	Grafton	F. 1914	1
J. Leviathan	2682	2961	Per.	3493	1911	W. L. Anderson	Hoards Sta.	F. 1918	2
McMartin	46	392	St. Br.	572	1909	Chas. Puffer	Morganston	F. 1916	1
Klinis (imp.)	4049	2948	Per.	3494	1910	Douglas Turney	Morganston	F. 1917	A1
Prince Frickland	21047	5338	Clyde.	5915	1915	Thos. Carew	Roseneath	S. 1919	1
Nuthurst W.	1573	3613	St. Br.	893	1897	Eldridge Thackeray	Roseneath	F. 1912	1
Kosu B.	7060	5267	Per.	5918	1916	John Gainer	South Monaghan	S. 1919	1
Paturot (imp.)	1972	1818	Per.	2512	1904	J. H. Gainer	South Monaghan	F. 1914	1
Gay Baron	8478	2090	Clyde.	2819	1906	J. T. Parks	Trenton	F. 1914	1
Lionel Baron	18188	4628	Clyde.	5077	1914	Lewis B. Stinson	Trenton	S. 1918	1*
King's Courtier (imp.)	12777	2132	Clyde.	959	1909	Lewis Ament & Son	Vernonville	S. 1919	1
Blacon St. Clair	13354	3772	Clyde.	4211	1911	Burton Ferguson	Wooler	F. 1918	1

ONTARIO COUNTY.

Barglass Style	21101	5293	Clyde.	5957	1916	Gordon B. Fisher	Ashburn	S. 1919	1
Baron Aberdeen	21005	5410	Clyde.	6050	1915	William Gardner	Ashburn	S. 1919	1
Tara Baron	17148	5125	Clyde.	5672	1913	E. E. Wright	Ashburn	S. 1918	1*
Celtin Premier	16668	4414	Clyde.	4749	1913	George Grant	Beaverton	F. 1917	1*
Ardimersay Duke (imp.)	14240	3121	Clyde.	2115	1905	Chas. E. Hepburn	Beaverton	S. 1913	1
Black Beauty	8670	5320	Per.	5961	1916	Hodgkinson & Tisdale	Beaverton	S. 1919	A1
Lively	8669	5319	Per.	5960	1915	Hodgkinson & Tisdale	Beaverton	S. 1919	A1
Paraplegie	4836	5282	Per.	5792	1915	Hodgkinson & Tisdale	Beaverton	F. 1918	1
Parapluie	4837	5281	Per.	5507	1915	Hodgkinson & Tisdale	Beaverton	F. 1918	1
Woodrow Wilson	8668	5321	Per.	5970	1914	Hodgkinson & Tisdale	Beaverton	S. 1919	A1

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ONTARIO COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Briton	2913	5362	St. Br.	5974	1910	C. H. Lawrence	Beaverton	S. 1919	1
Mack Baron	15959	3096	Clyde.	3651	1911	Donald McRae	Beaverton	S. 1919	1
Kelton	19067	4869	Clyde.	5339	1915	Finlay McRae	Beaverton	F. 1918	1
Prince Acme	15573	4516	Clyde.	4999	1913	James Innes	Blackwater	S. 1918	1*
Royal Everett	16351	3754	Clyde.	4248	1912	Patrick Gaughan	Brechin	F. 1918	1
King's Courtship (imp.)	14115	1677	Clyde.	1217	1906	Oscar Wilson	Brougham	F. 1914	1
Gipsy Lad	16360	4515	Clyde.	4982	1913	Geo. B. Johnston	Cannington	F. 1918	2
Gold Rod	17213	4991	Clyde.	5481	1915	Edward Lambert	Cannington	F. 1918	1
Baron Elect	1765	2286	St. Br.	1919	1901	John H. Pringle	Cannington	F. 1914	2
Easy Fortune	11029	884	Clyde.	1693	1910	J. H. Taylor & J. J. Jewell	Cannington	F. 1918	1
Ascot Pride	19385	5183	Clyde.	5729	1916	Geo. Davidson & Sons	Cherrywood	S. 1918	1*
Mac Alexander	21299	5412	Clyde.	6052	1916	James Evans	Claremont	S. 1919	1
Sir Alexander (imp.)	6665	2448	Clyde.	1339	1902	James Evans	Claremont	F. 1914	1
Baron's Best (imp.)	13930	603	Clyde.	439	1901	Graham Brothers	Claremont	F. 1917	A1
Chief Guardian (imp.)	18267	4798	Clyde.	5371	1914	Graham Brothers	Claremont	S. 1918	A1*
Judge Parker	1	3453	St. Br.	2916	1902	Graham Brothers	Claremont	S. 1913	1
Shawanoo King (imp.)	15708	4463	Clyde.	4760	1913	Graham Brothers	Claremont	S. 1918	A1*
Soldier Baron	18649	5323	Clyde.	5951	1916	Graham Brothers	Claremont	S. 1919	1
Terrington Cetewayo (imp.)	401	601	Hack.	437	1905	Graham Brothers	Claremont	F. 1914	1
Waverley Baron	18013	4822	Clyde.	5083	1914	Graham Brothers	Claremont	F. 1918	1
Waverley Royalist	18014	5122	Clyde.	5537	1915	Graham Brothers	Claremont	S. 1918	1*
Flashgate	20373	5078	Clyde.	5608	1915	E. F. Percy	Claremont	S. 1918	1*
Belle Boy (imp.)	8524	1290	Clyde.	1988	1905	Nelson Wagg	Claremont	F. 1917	A1
Gay Baron Boy	20339	5088	Clyde.	5643	1914	Nelson Wagg	Claremont	S. 1918	1*
Everard (imp.)	16333	4848	Clyde.	4237	1913	Smith & Richardson	Columbus	F. 1918	A1
Great Eastern (imp.)	15162	3766	Clyde.	3425	1907	Smith & Richardson	Columbus	F. 1918	A1
Helsington Sportsman (imp.)	15164	3649	Clyde.	3423	1911	Smith & Richardson	Columbus	S. 1918	1
Knight of Maryfield	7760	4527	Clyde.	5026	1904	Smith & Richardson	Columbus	S. 1916	1
Royal Design	17286	4849	Clyde.	4967	1914	Smith & Richardson	Columbus	F. 1918	A1
Royal Favour	18361	4850	Clyde.	5199	1910	Smith & Richardson	Columbus	F. 1917	A1
Tressilian (imp.)	16332	4084	Clyde.	4234	1911	Smith & Richardson	Columbus	F. 1918	A1
Village Swain (imp.)	15167	2883	Clyde.	3446	1912	Smith & Richardson	Columbus	F. 1918	A1
Glenavon's Chancellor	16978	4479	Clyde.	4868	1912	Fred Richardson & Sons	Columbus	F. 1918	1
King's Heather	14049	4836	Clyde.	5327	1911	D. Ryan	Dunbarton	F. 1918	A1
George of Claremont	13937	5360	Clyde.	6002	1912	Frank Baker	Goodwood	S. 1919	1
King Triumph	18892	5467	Clyde.	6083	1915	Donald McDonald	Greenbank	S. 1919	1
Lord Erskine Cairndale	17038	4394	Clyde.	4858	1914	R. Milne & Sons	Locust Hill	F. 1917	A1*
Royal Ivory Fashion	18068	4692	Clyde.	5122	1915	Alfred Carmichael	Myrtle	F. 1917	1*

Acme Pride	19334	4980	Clyde.	5470	1914	William Hopkins	Myrtle Sta.	F. 1918	1
Baron Elect (imp.)	5629	746	Clyde.	1257	1903	W. H. Pugh	Myrtle Sta.	F. 1912	1
Cairnbrogie Heir	18299	5128	Clyde.	5666	1915	W. H. Pugh	Myrtle Sta.	S. 1918	1*
Terrington Bellman (imp.)	294	745	Hack.	1256	1903	W. H. Pugh	Myrtle Sta.	F. 1912	1
Black Oreb	1449	5315	Shire	5953	1916	W. T. Baker	Oshawa	S. 1919	A1
Imperata	8394	5314	Per.	5952	1912	W. T. Baker	Oshawa	S. 1919	1
Paramount Regent	1476	5316	Shire	5954	1910	W. T. Baker	Oshawa	S. 1919	1
Perfection	19318	5308	Clyde.	5933	1915	W. T. Baker	Oshawa	S. 1919	1
Paddy B.	1958	1430	Per.	2028	1901	W. T. Baker	Oshawa	F. 1914	1
King Saul (imp.)	9588	2517	Clyde.	3116	1907	Charles Groat	Oshawa	F. 1914	1
Gallant Refiner	16972	5124	Clyde.	5669	1914	David Annan, Sr.	Pickering	S. 1918	1*
Brown Gallant	17019	4227	Clyde.	4688	1913	J. S. Beare	Pickering	S. 1919	1
Bucephalus 2nd	18079	5421	Clyde.	5827	1915	Frank Puckerin	Pickering	F. 1918	1
College Dewey	0119	4855	St. Br.	5273	1914	A. G. Dowson	Port Perry	F. 1918	1
Pomeroy	777	3032	St. Br.	3409	1909	A. G. Dowson	Port Perry	S. 1916	1
Dunure Laddie	16710	5035	Clyde.	5557	1914	W. J. Henders & Son	Port Perry	S. 1918	1*
Clan Favourite (imp.)	10654	1169	Clyde.	1030	1905	Jos. Stone	Port Perry	F. 1914	1
Royal Eastfield Lad	8166	2069	Clyde.	2677	1904	Nelson McDonald	Seagrave	S. 1914	1
Caringorm	9274	787	Clyde.	1815	1908	Samuel J. Gilbert	Sebright	S. 1917	2
Craigin of Brookdale	11066	694	Clyde.	907	1909	Alfred Yakley	Stouffville	S. 1917	2
Speers	951	1364	St. Br.	936	1903	Hall & Shields	Sunderland	F. 1912	1
Hillhead Comet (imp.)	14710	1284	Clyde.	2003	1909	A. T. Switzer	Sunderland	F. 1916	2
Chattan's Buchlyvie	14350	3826	Clyde.	4129	1912	Henry Curts	Thedford	F. 1918	1
Baron Smith (imp.)	5313	698	Clyde.	949	1904	John Warren	Udney	F. 1912	1
Prince of the Park (imp.)	9687	3480	Clyde.	3503	1907	Geo. Kydd	Uxbridge	F. 1914	1
Floriston (imp.)	15258	3112	Clyde.	3663	1911	Alex. McGregor	Uxbridge	F. 1918	1
Bucephalus (imp.)	3338	2698	Clyde.	2570	1899	S. C. Bunker	Whitby	F. 1914	1
Examiner (imp.)	18262	4802	Clyde.	5375	1914	Henry Thompson	Zephyr	F. 1918	1
High Tide (imp.)	13838	1112	Clyde.	1210	1908	Henry Thompson	Zephyr	S. 1917	1

OXFORD COUNTY.

King of the Saxons (imp.)	13760	711	Clyde.	1265	1910	W. B. Parker	Bright	F. 1918	A1
Longtemps (imp.)	4466	3990	Per.	4085	1911	W. B. Parker	Bright	F. 1918	1
Wahjinega	18858	5234	Clyde.	5833	1916	Wm. & Chas. Sutherland	Bright	F. 1918	1
Pat L. McGregor	957	1904	St. Br.	2448	1901	F. N. Case	Burgessville	S. 1915	1
Sky Pilot	855	2513	St. Br.	1105	1900	R. J. Chamberlain	Embro	F. 1914	1
Pride of Skeog (imp.)	11687	3926	Clyde.	1768	1908	D. E. A. & C. Meadows	Embro	S. 1915	1
Mucius (imp.)	13896	352	Clyde.	334	1903	Henry E. Schaefer	Embro (R.R. 5)	F. 1912	1
Baron Walker	14031	2726	Clyde.	2625	1910	E. A. Shortt	Embro	S. 1919	1
Prince Robert	12755	4962	Clyde.	1480	1911	George Smith	Embro	S. 1919	1

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OXFORD COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Gregory Dare	1645	4369	St. Br.	4915	1913	John H. McKay	Harrington	F. 1917	2*
Pride of Roxburgh	10797	1190	Clyde.	1359	1909	John H. & Frank Hicks	Ingersoll (R.R. 1)	F. 1916	1
Duskie Knight	17969	5388	Clyde.	5698	1916	S. J. Prouse	Ingersoll	S. 1919	1
Crown Dick	16947	4448	Clyde.	4823	1914	George Chesney	Innerkip	F. 1917	1*
Black Joe	1675	5278	St. Br.	5883	1910	Lawrence Fried	New Dundee	F. 1918	1
Duke of Ardlethan	17159	4453	Clyde.	4789	1914	Wm. M. Fletcher	Ostrander	F. 1917	1*
Bohrangus 2nd	9541	323	Clyde.	163	1909	H. C. Treffry	Otterville (R.R. 2)	S. 1917	1
Ildebert (imp.)	3028	2193	Per.	2841	1908	F. & G. Parkin	Oxford Centre	S. 1916	1
Allerby	1110	4993	St. Br.	5124	1907	Wesley Batteler	Plattsville	F. 1916	1
Golden Lad	17001	4234	Clyde.	4676	1912	Andrew S. Fleming	Springford	F. 1918	1
Bonnie Flisk (imp.)	18260	4797	Clyde.	5370	1913	P. Harold	Tavistock	F. 1918	A1
Karrare (imp.)	3071	1476	Per.	2360	1910	Herold & Ratz	Tavistock	F. 1918	1
Lassis (imp.)	3920	4309	Per.	4777	1911	Ratz & Herold	Tavistock	F. 1918	A1
Coronado (imp.)	254	537	Hack.	1100	1900	Wm. & Henry Lingelbach	Tavistock	F. 1912	1
Crown King	18915	4755	Clyde.	5126	1914	Annie Wettlaufer	Tavistock	F. 1918	A1
Royal Friendship	18786	5046	Clyde.	5624	1915	William Furse	Thamesford	S. 1918	1*
Denholmhill Dennis	20786	5245	Clyde.	5853	1916	W. W. Hogg	Thamesford	F. 1918	1
Nogent	4458	4561	Per.	4994	1913	G. D. Hutchison	Thamesford	F. 1917	1*
Sam Hughes	18423	5383	Clyde.	6023	1916	John Hutchison	Thamesford	S. 1919	1
Black Prince	4832	4914	Per.	5151	1914	R. & W. B. McFarlan	Thamesford	F. 1918	1
Rupin (imp.)	1061	577	Per.	230	1906	The Percheron Horse Co.	Thamesford	S. 1917	2
Royal Milton	13482	1937	Clyde.	165	1909	F. C. Kicksee	Tillsonburg	F. 1916	1
Papillon (imp.)	1062	2885	Per.	721	1905	R. B. Moulton	Tillsonburg	S. 1914	1
Romadore	3512	3659	Per.	4036	1912	Thos. Downey	Woodstock	F. 1918	2
Craigie Buchlyvie	12615	3294	Clyde.	451	1909	S. W. Jackson	Woodstock	S. 1916	1
Lodi (imp.)	4015	3211	Per.	3718	1911	G. H. Raper	Woodstock	F. 1918	1

PEEL COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Spier Peter	2824	5470	St. Br.	6063	1917	Geo. A. Cameron	Alton	S. 1919	1
Lumley's Best	1003	2421	Shire	2898	1910	R. B. Coulter	Alton	S. 1917	1
Stately City Boy	14477	1893	Clyde.	2640	1910	Jas. Morrison	Alton	S. 1917	1
Kamichi (imp.)	3065	2145	Per.	2673	1910	T. D. Elliott	Bolton	F. 1917	2
Baron Gregor (imp.)	14051	1611	Clyde.	2481	1910	Goodfellow Brothers	Bolton	F. 1917	A1
Colonel Lumsden	16903	4752	Clyde.	5188	1914	Goodfellow Brothers	Bolton	F. 1918	1
Kircudbright Baron (imp.)	14055	1597	Clyde.	2480	1910	Goodfellow Brothers	Bolton	F. 1917	A1
Sandy MacNab	14272	2980	Clyde.	3526	1912	Robt. H. Thomas	Bolton	F. 1918	1
Gachill (imp.)	2276	2863	Per.	505	1906	John Andrews	Brampton	F. 1914	1

Earl Scott (imp. in dam)	20028	5012	Clyde.	5540	1913	Guy Bell	Brampton	F. 1917	1*
Golden Favourite (imp.)	11456	371	Clyde.	494	1908	G. Bell & Wm. Findley	Brampton	F. 1917	A1
Milton's Last (imp.)	12487	214	Clyde.	1198	1908	G. Bell & Wm. Findley	Brampton	F. 1917	1
Astrologer	823	5394	Thor.	5975	1909	Jas. Bovaird	Brampton	S. 1919	1
Prince Hohenlohe	127	860	Thor.	1656	1904	Jas. Bovaird	Brampton	S. 1915	1
Brampton Scott	18753	5385	Clyde.	5924	1916	L. J. C. Bull	Brampton	S. 1919	1
Ictere (imp.)	1610	776	Per.	1512	1908	E. Chapman	Brampton	F. 1916	1
Hugo Brunstane	17614	5172	Clyde.	5723	1915	W. D. Dolson	Brampton	S. 1918	1*
Muir Hall	1725	4397	St. Br.	4863	1911	F. Hutchinson & R. Robson	Brampton	F. 1917	A1*
Whitehall Favourite	20601	5395	Clyde.	6007	1916	W. J. McCallum	Brampton	S. 1919	1
Gateside Favourite (imp.)	15226	3153	Clyde.	3682	1912	Nix & Nixon	Brampton	F. 1918	1
The Tester	12127	2134	Clyde.	1102	1907	H. M. Robinson	Brampton (R.R. 5)	F. 1914	1
Milton Junior	20897	5444	Clyde.	5884	1916	A. W. Snyder	Brampton	F. 1918	1
Spartan (imp.)	509	1127	Hack.	1263	1905	James Tilt	Brampton	F. 1917	A1
Oro Leonard	949	1426	St. Br.	1821	1909	John Carr	Caledon East	F. 1916	1
Pride of Albion (imp.)	14056	3014	Clyde.	3554	1911	Ronald Crawford	Caledon East	S. 1919	1
Baron Hamlet (imp.)	6090	372	Clyde.	507	1904	W. J. Trathen	Caledon	F. 1912	1
Royal Graham	20263	5091	Clyde.	5587	1915	William G. Bailey	Campbell's Cross	S. 1918	1*
Erindale Posey	1648	2619	St. Br.	2503	1908	Jos. Wolfe	Cooksville	F. 1916	1
Dan MacNab	14354	2995	Clyde.	3527	1912	Robert Clarkson	Inglewood	S. 1919	1
Thom's Pride (imp.)	12642	1326	Clyde.	1861	1909	James Graham	Inglewood	F. 1916	1
Mike McKerron	932	3883	St. Br.	4301	1909	Clinton Henry Binions	Malton	F. 1916	1
Imperial Jr.	243	3398	St. Br.	3860	1905	Fred Garbutt	Malton (R.R. 1)	S. 1915	1
King Chattan (imp.)	8815	487	Clyde.	1162	1903	Robert Orr	Mono Mills	F. 1916	1
Better Baron	20568	5174	Clyde.	5747	1915	J. L. Clark	Norval Sta.	S. 1918	1*
Prince of Greenhall (imp.)	11684	570	Clyde.	506	1908	Albert Hewson	Malton	F. 1916	A1
Isole (imp.)	2271	900	Per.	1594	1908	A. E. Wedgewood	Malton	F. 1916	1
Emulator (imp.)	4502	2047	Clyde.	1881	1903	Little Brothers	Mono Road	F. 1914	1
Sir Gilbert 2nd	14505	2048	Clyde.	1882	1910	Little Brothers	Mono Road	F. 1918	1
Master Hillcrest	17869	5011	Clyde.	5532	1915	John Pendergast	Mono Road (R.R. 2)	F. 1917	1*
Eastwood Todd	2034	4633	St. Br.	5045	1907	Frank McNamara	Schomberg	F. 1917	A1
Lord Marathon	18200	5257	Clyde.	5906	1916	Jas. H. Patterson	Summerville	S. 1919	1
Kiosque (imp.)	4010	3885	Per.	3294	1910	Don. McLaren & W. Brown	Terra Cotta	S. 1917	1
The Moose	1834	4709	St. Br.	5177	1914	Lewis A. Teeter	Terra Cotta (R.R. 1)	F. 1918	1

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PERTH COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Knockinlaw Revolt (imp.)	15482	2958	Clyde.	3489	1911	John Gray	Atwood	F. 1918	A1
Scottish Leader	21631	5448	Clyde.	5999	1916	Patrick J. Hogan	Bornholm	S. 1919	2
Kiosque (imp.)	3195	3616	Per.	3971	1910	Edward Wood	Britton	S. 1919	1
Mornington Chief	20816	5386	Clyde.	5998	1916	Robt. Hannah & Wilf. Kerr	Brunner	S. 1919	1
Keir Prince	14487	1410	Clyde.	2326	1911	Wilfred Kerr	Brunner	F. 1918	2
Junot (imp.)	3508	3358	Per.	3824	1909	Henry Stricker & Co.	Drayton	F. 1916	1
Cumberland Scott (imp.)	13979	2892	Clyde.	3183	1911	Robt. Burchill	Dublin	F. 1917	1*
Punch of Glamis	17888	4806	Clyde.	5118	1914	J. C. Dill	Gadshill	S. 1919	1
Integrity (imp.)	11864	2218	Clyde.	2949	1909	D. Bender (Estate)	Gowanstown	F. 1916	1
J. G. Sphinx	2647	5164	St. Br.	5659	1913	Thos. Moore	Gowanstown	S. 1918	1*
Missouri Bars	2173	5016	St. Br.	5498	1914	W. J. Moore	Gowanstown	F. 1917	2*
Mercedes Yet	12257	1668	Clyde.	2501	1907	George Duffield	Granton	S. 1915	2
Gartly Forever (imp.)	8412	490	Clyde.	1197	1906	John Hanna	Kirkton	F. 1918	A1
Mitre Bearer	709	2483	St. Br.	3175	1904	John A. McIntyre	Listowel	F. 1914	1
Hesope (imp.)	1592	3568	Per.	614	1907	John McKeaver	Listowel	S. 1915	1
King Charles	5537	5133	Per.	5285	1914	Allen Weber	Listowel	F. 1918	1
Baron Rozelle	11554	3257	Clyde.	3742	1910	Arthur Maynard	Millbank	F. 1918	1
Signalman	8970	903	Clyde.	1569	1907	Jas. R. Broughton	Milverton	F. 1914	1
Keir Prince	14487	1410	Clyde.	2326	1911	W. H. Grosch	Milverton	F. 1918	1
Widower Peter	1791	3340	St. Br.	3809	1910	W. H. Grosch	Milverton	F. 1918	1
Gilbert Patch	1571	5224	St. Br.	5778	1912	W. H. Grosch	Milverton	F. 1918	1
Kontrepoids (imp.)	3504	3906	Per.	4444	1910	Stephen C. McLellan	Milverton	S. 1917	2
King Norman (imp.)	17898	4480	Clyde.	4918	1909	Hugh Colquhoun	Mitchell	F. 1917	A1
British Hero	20573	5167	Clyde.	5670	1912	Wm. Colquhoun	Mitchell	F. 1918	A1
Free Mason (imp.)	7847	841	Clyde.	1727	1905	Wm. Colquhoun	Mitchell	F. 1914	1
Riverbank (imp.)	17954	4570	Clyde.	5034	1911	Wm. Colquhoun	Mitchell	F. 1918	A1
Flashlight	0143	5218	St. Br.	5769	1916	D. Douglas & Sons	Mitchell	F. 1918	A1
Scottish Mains (imp.)	11587	2077	Clyde.	2757	1908	Frederick Eisler	Mitchell	F. 1917	A1
Craigie Baronet (imp.)	17599	4392	Clyde.	4846	1912	Moses Forsyth	Mitchell	F. 1917	A1*
Official	1751	4616	St. Br.	5061	1900	Henry James	Mitchell	S. 1916	1
Sololand	2302	4918	St. Br.	5428	1911	A. E. Larkworthy	Mitchell	F. 1918	1
Kamphre (imp.)	8965	5327	Per.	5978	1910	Litt & Woolacott	Mitchell	S. 1919	1
King Kay	13029	529	Clyde.	400	1909	John Murray	Mitchell	F. 1916	1
Lord Hiawatha	14433	3770	Clyde.	4071	1912	John Murray	Mitchell	F. 1918	1
Toddy Direct	215	480	St. Br.	737	1906	George Riley	Mitchell	F. 1914	1
Faraway Blend (imp.)	9006	1098	Clyde.	1650	1904	John E. Stacey	Mitchell	F. 1914	1
Dothan	60432	3773	St. Br.	4069	1912	Henry Victor	Mitchell	S. 1919	1
East Huron Prince	17982	4129	Clyde.	3966	1909	George Wolfe	Mitchell	F. 1916	1

Sydnwurt King	20670	5296	Clyde.	5916	1916	Wm. J. Roger	Munro	S. 1919	1
Duke of Wellington	7610	2056	Clyde.	2228	1905	John C. Paterson	New Hamburg (R.R. 3)	F. 1914	2
Prince of Palmerston	14925	2549	Clyde.	3234	1910	Asel Ackerman	Palmerston	F. 1918	1
Bold Clyde	4133	5342	Clyde.	6000	1900	Robert Fleming	Poole	S. 1919	1
Hazelwood	820	4701	Hack.	5135	1914	John Knechtel	Rostock	S. 1919	1
Captain Murray	11746	2503	Clyde.	3191	1908	Theodore Riehl	Rostock	S. 1916	1
Prince Allan	19303	5420	Clyde.	6039	1916	T. M. Kelly	Sebringville	S. 1919	1
Conquering Baron (imp.)	10778	2365	Clyde.	2653	1904	Wm. J. Malloy	Sebringville	F. 1914	1
Kent Favourite (imp.)	16472	3916	Clyde.	4361	1911	H. Reidt	Shakespeare	F. 1918	A1
Springfield 2nd	555	3310	Thor.	3297	1903	H. Reidt	Shakespeare	S. 1915	1
Makwira (imp.)	15279	3267	Clyde.	3754	1908	John Livingstone	Staffa	S. 1916	1
Lord Malcolm (imp.)	15194	3125	Clyde.	3665	1912	Thos. Colquhoun	Staffa	F. 1917	A1*
Involucre (imp.)	2145	354	Per.	350	1908	George Burnside	St. Mary's (R.R. 5)	S. 1917	1
Broomdale (imp.)	12150	2401	Clyde.	2552	1904	John Fitzsimmons	St. Mary's	F. 1914	1
Steel Trust	1018	2402	St. Br.	2553	1902	John W. Wood	Lethbridge, Alta	F. 1914	1
						Jno. Fitzsimmons, Agent	St. Mary's.		
Pacific (imp.)	13173	565	Clyde.	277	1904	William Mossip	St. Mary's	F. 1917	A1
Teddy Bars	1464	3507	St. Br.	3744	1905	W. L. Mossip	St. Mary's	F. 1914	1
Niagara Power	2789	3445	St. Br.	3899	1907	William Nickle	St. Mary's	F. 1914	2
Anchor's Pride (imp.)	15220	3206	Clyde.	3727	1907	Wm. Rae, Jr.	St. Mary's	F. 1914	1
Warfare	19120	5409	Clyde.	6012	1916	Wm. Rae, Jr.	St. Mary's	S. 1919	1
King Mucus	21758	5485	Clyde.	6013	1916	Mrs. Lizzie Richardson	St. Mary's	S. 1919	1
Duke of Avon Brae	13919	1977	Clyde.	2740	1910	Alex. Thompson	St. Mary's	F. 1918	1
Sir Edmund (imp)	9372	1524	Clyde.	2066	1899	D. F. Thompson	St. Mary's	F. 1914	2
Earl Johnson	1208	5346	St. Br.	3998	1908	John P. Aitcheson	Stratford	S. 1919	1
Locksley (imp.)	15239	3146	Clyde.	3612	1911	Austin Dingman	Stratford	F. 1918	A1
Lord Newby	18228	5343	Clyde.	5770	1916	Austin Dingman	Stratford	F. 1918	1
Blake Electricity	2910	5344	St. Br.	5776	1914	William N. Headon	Stratford	S. 1919	1
Lucien McKinney	1189	4528	St. Br.	4952	1912	P. S. Robertson	Stratford	F. 1918	1
Alladin (imp.)	13975	2426	Clyde.	2683	1911	Henry Metz	Stratford	F. 1918	1
Prince of St. Paul's	10520	2427	Clyde.	2674	1908	Henry Metz	Stratford	S. 1915	1
Prince Victor (imp.)	5785	1620	Clyde.	1771	1902	Fred Riehl	Stratford	F. 1914	1
Royal Brino	1332	2630	St. Br.	2857	1901	Sandy Walsh	Stratford	S. 1914	1
Prince of Armadale (imp.)	9919	541	Clyde.	1542	1907	Bannerman Brothers	West Monkton	F. 1914	1
Atwood Boy	14441	3818	Clyde.	4347	1912	Z. E. Gill	West Monkton	F. 1917	1*
Baron Galloway (imp.)	8482	1753	Clyde.	2017	1904	Henry Brothers	West Monkton	F. 1914	1

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PETERBORO COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Charming Rod	14635	3205	Clyde.	3726	1912	Fred Anderson	Bailieboro	F. 1918	2
Craigie MacQueen	17200	4647	Clyde.	5072	1914	Fred E. Chase	Chase's Cors.	S. 1919	2
Acme's Echo	11623	2430	Clyde.	3135	1910	Jas. Quinlin	Cordova Mines	F. 1918	1
McEwan's Pride	11622	3349	Clyde.	3818	1910	Marquis L. Post	Hastings	S. 1919	1
Haldimand's Pride	5900	3056	Clyde.	1790	1904	Cecil Radley	Hastings	F. 1914	1
Capulet	12619	2329	Clyde.	2634	1909	Richard Walsh	Hastings	F. 1916	1
Jamlon (imp.)	2333	2330	Per.	2635	1909	R. Walsh	Hastings	F. 1916	1
Jim Shell	257	2631	St. Br.	2636	1911	R. Walsh	Hastings	S. 1919	1
Lord Lionel 2nd	5400	546	Clyde.	811	1904	Mark Spencer	Havelock	F. 1912	1
Drumbeg Chieftain (imp.)	12622	324	Clyde.	180	1909	John Lonergan	Indian River	F. 1916	1
Inaltere (imp.)	2144	151	Per.	774	1908	Thos. J. McConnell	Indian River	F. 1916	1
Prince of Wales of Manchester	4620	1698	Clyde.	179	1902	Alex. Nesbitt & Son	Indian River	F. 1912	2
Javert	8598	5307	Per.	5931	1915	William Kempt	Keene	S. 1919	1
Christopher North	638	5112	Hack.	5618	1903	Herbert J. Miller	Keene	S. 1918	1
Coveney Marmion (imp.)	329	430	Hack.	799	1903	H. J. Miller	Keene	F. 1917	A1
Duke of Teck	18975	5036	Clyde.	5572	1913	Stephen Harrison	Lakefield (R.R. 1)	S. 1918	1*
Sir Ben (imp.)	5408	2152	Clyde.	2859	1901	J. Elmhirst & W. Renwick	Lang	F. 1914	1
Sir Everard of Birdsall	19558	5208	Clyde.	5695	1916	Elmhirst & Renwick	Lang	S. 1918	1*
Baron MacQueen	6624	1907	Clyde.	2309	1905	Wellington Burgess	Norwood	S. 1915	1
John Bright 3rd	17942	5039	Clyde.	5614	1915	W. H. R. Baptie	Peterboro	S. 1918	1*
Journalier (imp.)	2330	331	Per.	219	1909	Frank H. Burke	Peterboro	S. 1917	1
Geulin (imp.)	932	3177	Per.	250	1906	James Collins	Peterboro (R.R. 9)	S. 1915	1
Baron Murray (imp.)	13820	1489	Clyde.	1146	1910	W. J. Cox	Peterboro	S. 1917	1
Scotland's Knight	13940	3691	Clyde.	4077	1912	Richard Doris	Peterboro (R.R. 8)	S. 1919	1
Gartley's Challenger (imp.)	5405	1424	Clyde.	1749	1902	Lewis & Clarence Ferguson	Peterboro (R.R. 2)	S. 1915	1
Baron's Fortune	11657	2058	Clyde.	2289	1910	W. J. Grant	Peterboro (R.R. 1)	F. 1918	1
Marquis	3640	2552	Per.	3185	1910	James Killen	Peterboro (R.R. 1)	F. 1918	1
Inceste (imp.)	1609	1405	Per.	12	1908	R. H. Nesbitt	Peterboro (R.R. 4)	F. 1916	2
Koumis (imp.)	3850	2874	Per.	3386	1910	R. H. Nesbitt	Peterboro	S. 1918	1
Fernhall	2315	3900	St. Br.	4410	1909	F. L. Robinson	Peterboro	S. 1917	2
Guy Newman	2689	5265	St. Br.	5766	1917	F. L. Robinson	Peterboro	F. 1918	1
Lorin 2nd	4347	4354	Per.	4825	1913	W. A. Roseborough	Peterboro	F. 1917	1*
McNair 2nd	21618	3794	Clyde.	4351	1902	Michael Sullivan	Peterboro (R.R. 8)	S. 1915	1
Baron Prince	21498	5411	Clyde.	6032	1916	Wm. Whittington	Peterboro (R.R. 3)	S. 1919	1

PRESCOTT COUNTY.

Territorial (imp.)	401	1994	Per.	496	1904	Laniel & Chevrier	Alfred	F. 1912	1
Tam Baron	10422	1075	Clyde.	326	1909	W. E. N. Byers & Son	Hawkesbury	S. 1919	1
Goliath (imp.)	405	2794	Per.	270	1906	R. A. Hanna	E. Hawkesbury	F. 1914	1
Korndyke	5621	5406	Per.	6026	1915	L. & H. Hughes	Plantagenet	S. 1919	2
Robert Erskine (imp.)	16183	3462	Clyde.	3906	1911	Eugene St.ˢ Denis	Plantagenet	F. 1918	1
Mikado (imp.)	12926	1322	Clyde.	1866	1908	G. A. Ryan	Riceville	S. 1915	1
Blaiket Blend	15197	3093	Clyde.	3631	1910	Pierre Vachon	Ste. Anne de Prescott	F. 1918	A1
Lord Allan	4497	2399	Clyde.	3112	1904	John D. McCallum	Vankleek Hill	F. 1914	1

PRINCE EDWARD COUNTY.

Highlander Chief	15758	4578	Clyde.	4989	1913	M. E. Wood	Ameliasburg	F. 1917	1*
Jamour (imp.)	3058	3006	Per.	3327	1909	Herbert Parry	Bloomfield	S. 1916	1
Glenco	5535	4754	Per.	5204	1914	M. Grant Thompson	Bloomfield	F. 1918	1
Jouan (imp.)	2139	653	Per.	780	1909	Grant Thompson	Bloomfield	F. 1916	1
Kinellar Prince (imp.)	13929	1288	Clyde.	1995	1910	Horace Alyea	Consecon	S. 1919	1
Jasper	4306	4277	Per.	4714	1913	W. W. Carter	Consecon	F. 1918	1
Won't Dance	1669	3796	St. Br.	4355	1909	Edward Allan	Picton	F. 1916	1
Sir Balcon	17664	5230	Clyde.	5815	1915	Chas. B. Barker	Picton (R.R. 2)	F. 1918	1
Domino (imp.)	1065	99	Per.	812	1905	G. Edward Boulter	Picton	F. 1914	1
Kroupier (imp.)	3037	431	Per.	805	1910	G. Edward Boulter	Picton	F. 1918	1
Vidocq	6523	5250	Per.	5816	1916	G. Edward Boulter	Picton	F. 1918	1
Archie K. Pointer	0102	3785	St. Br.	4292	1904	S. A. Cole	Picton	S. 1915	1
President De Lion	811	635	St. Br.	573	1901	Jas. W. Brickman	Rednersville	F. 1918	1
Acme Yet	10381	554	Clyde.	565	1910	Geo. Robinson	Rossmore	S. 1917	1
Koursier (imp.)	4007	4511	Per.	3988	1910	J. H. Davidson	Wellington	F. 1918	1

RENFREW COUNTY.

Ocean Du Blocus (imp.)	657	4609	Bel. Dr.	4901	1911	Allen Cardiff	Admaston (R.R. 1)	F. 1917	1*
Grand Opera	2388	4825	St. Br.	1206	1908	John Brennan	Arnprior	F. 1916	1
Impudique	5577	5220	Per.	5817	1916	Angus Cameron	Arnprior	F. 1918	1
Gauddette	4584	4728	Per.	5210	1914	J. D. Cameron	Arnprior	F. 1918	1
Acme Again	20091	5228	Clyde.	5832	1915	John J. Coulas	Barry's Bay	F. 1918	1
Gaiac (imp.)	1557	697	Per.	931	1906	A. E. White	Barry's Bay	F. 1914	1
Vivacity 2nd	13015	436	Clyde.	839	1911	A. E. White	Barry's Bay	F. 1918	1
Sulphur Spring	11406	510	Clyde.	1435	1910	Wm. T. Cassidy	Beachburg	F. 1917	1
Hedley's Choice	13052	3947	Clyde.	4315	1911	Alex. Hawthorne	Beachburg	F. 1918	1

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RENFREW COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Royal Loma	15291	3666	Clyde.	4126	1912	Gordon McClelland	Beachburg	F. 1918	1
Bill MacNab	18883	5294	Clyde.	5942	1916	Albert Watchorn	Beachburg	S. 1919	1
Koyama	8029	732	Clyde.	872	1906	F. H. Brisco, W. D. Tuffy and William Berry	Cobden	F. 1914	1
Lord Connaught	17221	5302	Clyde.	5878	1915	Patrick & Con. Durack	Cobden	S. 1919	1
Jimmie Marquis	10863	3799	Clyde.	4171	1909	Alex. McDermott	Cobden	S. 1918	2
Great Onward	1400	3824	St. Br.	4364	1908	W. D. Tuffy	Cobden	S. 1915	1
Hudson (imp.)	1556	668	Per.	46	1907	Patrick Culligan	Douglas	S. 1915	1
Balcraig Pride (imp.)	10227	2884	Clyde.	3449	1908	Patrick Culligan	Douglas	S. 1919	1
Verona Leader	866	1267	Shire	2032	1909	P. P. Enright	Douglas	F. 1916	1
Corbeau Des Landes	1619	5367	Fr. Can.	5835	1914	John Neville	Douglas	S. 1919	1
Lord Dunmore	1959	1404	Per.	47	1908	Chas. Virgin	Douglas	F. 1916	1
Jasper (imp.)	2327	3620	Per.	3046	1909	James Martin	Eganville	F. 1916	1
Imperial George	14406	511	Clyde.	1436	1911	James L. Miller	Glasgow	F. 1918	1
Lord Rock	15780	5376	Clyde.	5994	1913	Foster Brothers	Hyndford	S. 1919	1
Stonewall	13397	3295	Clyde.	3778	1909	Foster Brothers	Hyndford	S. 1918	1
Talbot of Bellback	12228	3348	Clyde.	3697	1910	Foster Brothers	Hyndford	S. 1918	1
Tanic Barr	14405	2879	Clyde.	3447	1912	Foster Brothers	Hyndford	S. 1919	1
Hudson	1519	1624	Per.	101	1907	Thos. Dunnigan	Killaloe	S. 1915	1
Royal Elegance	503	542	Hack.	1550	1907	William Noack	Killaloe Sta.	F. 1914	1
Roy MacGregor	7186	5416	Per.	5989	1917	John P. O'Grady	Killaloe Sta.	S. 1919	1
Oceanic (imp.)	16672	4051	Clyde.	4558	1910	Wm. Verch	Killaloe Sta.	F. 1918	1
Baron's Kid	9742	5131	Clyde.	5645	1908	William Croskery	Pembroke	S. 1918	2
Joe Berry	076	4046	St. Br.	4159	1913	Remi Fortier	Pembroke	F. 1918	1
Lord Douglas	12434	309	Clyde.	45	1910	William Graham	Pembroke	S. 1919	2
Journal	2137	520	Per.	1750	1909	Robert Strutt	Pembroke	F. 1917	1
Wurtemburg	2215	4791	St. Br.	5320	1911	Allan Carswell	Renfrew	F. 1918	1
Nard (imp.)	6382	4936	Per.	5444	1913	Robert Graham	Renfrew	F. 1918	A1
Royal Cadet (imp.)	13844	1490	Clyde.	1247	1909	Robert Graham	Renfrew	F. 1916	1
Brilliant	8924	5404	Per.	6006	1916	George Mankie	Renfrew (R.R. 3)	S. 1919	1
Hasli (imp.)	1560	452	Per.	1096	1907	John Mayhew & Company	Renfrew (R.R. 2)	F. 1914	1
Orkindee	1656	4319	St. Br.	4929	1914	M. J. O'Brien	Renfrew	S. 1918	1*
The Captain	11518	366	Clyde.	446	1910	M. J. O'Brien	Renfrew	S. 1918	1
Barryvale King	19515	5482	Clyde.	6097	1916	M. J. O'Brien	Renfrew	S. 1919	1
Pride of Glasgow	16407	5424	Clyde.	6045	1914	M. T. Stafford	Renfrew	S. 1919	1
Earl Park (imp.)	13736	3987	Clyde.	1227	1910	Kenneth Wallace	Renfrew	S. 1918	1

RUSSELL COUNTY.

Rosebank's Fashion	9637	3142	Clyde.	3564	1909	W. E. Lowe	Bear Brook	F. 1916	1
Jeudi (imp.)	3841	3643	Per.	3333	1909	Bourget Horse Association	Bourget	S. 1916	1
Navan Knight	19327	5403	Clyde.	6046	1916	W. R. Burch	Cumberland (R.R. 2)	S. 1919	1
Hableur (imp.)	2241	1827	Per.	1298	1907	John Fitzpatrick	Cumberland	F. 1914	1
Golden Result	1204	4550	St. Br.	4974	1904	John B. Robinson	Leonard	S. 1916	1
Roscol	3477	4584	Per.	5008	1906	John B. Robinson	Leonard	S. 1916	1
Dunshinnoch	19478	5259	Clyde.	5898	1916	N. S. Rothwell	Navan	S. 1919	1
Joubert (imp.)	693	3379	Bel. Dr.	3848	1911	Jos. Lefebvre	Orleans	F. 1918	2
Casino (imp.)	257	1062	Per.	831	1903	Donald Campbell	Russell	F. 1912	1
Commander	7562	5304	Per.	5927	1917	Jas. S. Fader	Russell	S. 1919	1
Koquelin (imp.)	4460	3771	Per.	4083	1910	T. E. Herrington	Russell	F. 1917	1
Baron Clifty (imp.)	17266	4351	Clyde.	4813	1913	William Meharey	Russell	F. 1917	A1*
Golden Crown (imp.)	10656	1463	Clyde.	2127	1905	William Meharey	Russell	F. 1917	A1
Prince Patrick	9353	1491	Clyde.	1430	1906	Howard Wilson	Russell	F. 1914	1
Lord Howick (imp.)	9692	1303	Clyde.	1949	1907	Joseph Ouimet	St. Albert	F. 1914	1
British Knight (imp.)	15238	2869	Clyde.	3402	1911	J. D. Eadie	Vars	F. 1917	1*
Russell Champion	13474	2839	Clyde.	3347	1909	Robert L. Eadie	Vars	F. 1918	1
Gold Heels	1607	3825	St. Br.	4416	1913	Fred. W. Melvin	Vars	F. 1918	A1

SIMCOE COUNTY.

Major Muir (imp.)	12559	2714	Clyde.	1363	1909	Anthony Chebott	Allenford	S. 1917	1
Surprise	19480	5384	Clyde.	6031	1916	W. T. Dunn	Alliston	S. 1919	1
Baron Rowena (imp.)	4469	596	Clyde.	287	1903	Robert Stephenson	Alliston	F. 1917	A1
Royal Mac C.	19963	5365	Clyde.	5995	1916	Simon McIntosh	Angus	S. 1919	2
Athenian (imp.)	8110	2002	Clyde.	1641	1901	Guy Maison	Angus	S. 1914	1
Black Peer (imp.)	13806	1822	Clyde.	942	1910	Roy & Milton Legget	Ballycroy	S. 1919	1
Peer's Pride	20893	5352	Clyde.	5988	1916	R. Ray Leggett	Ballycroy	S. 1919	1
Duke of Bondhead	14656	2178	Clyde.	2789	1910	John Barrow	Beeton	S. 1917	2
Lord Thomas (imp.)	11487	378	Clyde.	539	1908	Percy Semple	Beeton	F. 1916	1
Celtic Baron MacQueen	15918	4581	Clyde.	4972	1913	W. J. Faris	Bradford	S. 1918	1*
Duke of Montrose (imp.)	9561	1374	Clyde.	2302	1907	Frank Saint	Bradford	F. 1914	1
Royal Baron	4722	3870	Clyde.	4250	1900	Frank Saint	Bradford	F. 1914	1
Touchstone (imp.)	13846	1384	Clyde.	2304	1910	Frank Saint	Bradford	F. 1918	A1
Jay (imp.)	2262	1876	Per.	2618	1909	James Doyle	Coldwater	F. 1916	1
Duke of Auchgoyle	17160	5176	Clyde.	5653	1915	Thos. McFarlane	Coldwater	S. 1918	1*
Scotia's Pride (imp.)	16331	4085	Clyde.	4235	1910	Wm. & Barry Jebb	Cookstown	S. 1919	1
Pearl Finer (imp.)	4557	1008	Clyde.	716	1902	R. H. Leadley	Cookstown	F. 1914	1
Pearl Finder Junior	18946	4858	Clyde.	5391	1914	Henry Leadley	Cookstown	F. 1918	1

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SIMCOE COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Karton (imp.)	3070	2312	Per.	2840	1910	Andrew Bowman	Craigvale	F. 1918	1
Gartly Recruit	17361	4820	Clyde.	5400	1915	Isaac L. Aikins	Creemore (R.R. 2)	F. 1918	1
Oro Vero	1605	4852	St. Br.	4955	1914	William Leach	Duntroon	S. 1917	1*
Cacus Star	1997	4562	St. Br.	5021	1907	J. W. Manarey	Duntroon	S. 1916	1
Huron's Hiawatha	12947	4022	Clyde.	4322	1911	J. W. Manarey	Duntroon	S. 1919	1
Star of Roses (imp.)	3614	1101	Clyde.	1673	1899	J. W. Manarey	Duntroon	F. 1914	1
Duc De Maxwelton	4248	4987	Per.	5290	1913	Hazel Edwards	Elmvale	F. 1918	1
Solway King (imp.)	11233	1901	Clyde.	2465	1908	Hazel Edwards	Elmvale	S. 1918	1
Archie Gay	16718	4469	Clyde.	4763	1913	Joseph H. Edwards	Elmvale	F. 1917	1*
Upperton Prince (imp.)	11484	794	Clyde.	1791	1906	Chas. Grigg	Elmvale	F. 1914	1
Buchlyvie Mac	18386	5063	Clyde.	5542	1915	W. L. Ritchie	Elmvale	F. 1917	1*
Barb	8831	5370	Per.	5914	1912	A. R. Murphy	Everett	S. 1919	1
Intellect	8830	5371	Per.	5925	1914	A. R. Murphy	Everett	S. 1919	1
Jurat (imp.)	3253	1958	Per.	2545	1909	A. R. Murphy	Everett	S. 1917	1
Major Guedo	6492	5449	Per.	6069	1917	A. R. Murphy	Everett	S. 1919	1
Everett Chief	19157	5258	Clyde.	5838	1916	James Rusk	Everett	F. 1918	1
Montrave Richards	17024	4422	Clyde.	4751	1914	James Rusk	Everett	F. 1918	1
Simcoe King	17761	4831	Clyde.	5297	1915	Fred Richardson	Fergusonville	F. 1918	1
Pianiste (imp.)	3941	1821	Per.	1158	1902	Thos. Blain	Gilford	F. 1912	1
Viscount Kinnaird (imp.)	13822	3208	Clyde.	1144	1909	Alex. C. Graham	Hawkestone	F. 1918	1
King of Diamonds (imp.)	12486	217	Clyde.	1201	1909	Fitzgerald Brothers	Hillsdale	F. 1916	2
Liebniz (imp.)	3922	3031	Per.	3364	1911	Edward Maurice	Lafontaine	S. 1919	2
Joigny (imp.)	2340	93	Per.	695	1909	Walter Lawson	Lawson	F. 1916	1
Pitcraigie Standard (imp.)	12509	875	Clyde.	1654	1909	Robert Boyes	Lefroy	S. 1916	1
Prince Thomas	9322	1629	Clyde.	2426	1907	Chas. Northgraves	Lefroy	F. 1914	1
Leicester (imp.)	3921	3448	Per.	3816	1911	Peter Skelley	Loretta	F. 1918	1
Prince Arundle	608	326	St. Br.	196	1903	A. G. Chew	Midland	F. 1912	1
National	5732	3651	Clyde.	386	1905	A. G. Chew	Midland	F. 1914	1
Jess Willard	5124	5019	Per.	5538	1915	Jos. Chappell	Minesing	F. 1917	1*
Member Sphinx	987	1807	St. Br.	1928	1900	Louis O'Connor	Mt. St. Louis	S. 1913	1
Corinthian (imp.)	13824	2719	Clyde.	1147	1910	Kelly & Gaughan	Orillia	S. 1919	1
Heart of Oak	1318	2887	Shire	3379	1911	George Langstaff	Orillia	F. 1917	1*
Beachly Boy	1414	4320	St. Br.	4743	1913	Edward Lyons	Orillia	F. 1917	1*
Alcyonium Boy	1455	2214	St. Br.	924	1893	Norman Nash	Orillia	F. 1912	1
Lenior (imp.)	4443	3714	Per.	4244	1911	J. M. Barnhardt	Oro Sta.	F. 1918	A1
Baron Mac	12070	313	Clyde.	81	1909	Samuel Kissock	Oro Sta.	F. 1916	1
Major Lewis	3485	925	Per.	183	1903	A. J. Taton	Penetanguishene	F. 1912	1
Mountain Dee	0167	5481	St. Br.	6086	1910	Albert Dubeau	Penetanguishene	S. 1919	2

Stately King	19491	5226	Clyde.	5844	1916	J. A. Caldwell	Shanty Bay	F. 1918	1
Solway Mac	21346	5373	Clyde.	5963	1915	W. A. Luck	Shanty Bay	S. 1919	1
High Honor (imp.)	15178	3154	Clyde.	3683	1908	Robert Armstrong	Stayner	F. 1916	1
Royal Wildfire (imp.)	526	1181	Hack.	1522	1903	Neil Bell	Stayner	F. 1914	2
Felicity (imp.)	11490	1696	Clyde.	1658	1908	Neil Bell	Stayner	S. 1915	1
Institut (imp.)	1336	688	Per.	115	1908	Albert Lynn	Stayner	F. 1916	1
Royal Saxon	468	4123	Hack.	4432	1905	James Moore	Stayner	S. 1915	2
Celtic Laird (imp.)	5413	1337	Clyde.	1674	1903	Rogers Brothers	Stayner	F. 1914	1
Lord Archie (imp.)	13284	558	Clyde.	144	1908	Christopher Thomson	Stayner	F. 1917	A1
Bargless 2nd	17072	4688	Clyde.	5051	1914	Herbert J. Hopkins	Sturgeon Bay	F. 1918	1
Lawford Forest King	881	1947	Shire	159	1908	Thos. Readman	Thornton	S. 1917	1
King Grant	18747	4615	Clyde.	4841	1913	Wm. Sharpe	Thornton	F. 1917	1*
Regal Direct	1370	2981	St. Br.	3486	1899	Hiram Kitely	Tottenham (R.R. 3)	F. 1914	1
Intact (imp.)	2201	693	Per.	5012	1908	Jas. McDevitt	Tottenham	S. 1917	1
Simcoe King	15902	3414	Clyde.	3834	1911	John Semple	Tottenham	F. 1918	1
Montrave Rouser (imp.)	12114	692	Clyde.	894	1907	Alfred Jones	Vasey	F. 1914	1
Gold Dust Chief	19065	5094	Clyde.	5606	1913	Wm. McWatters	Vasey	S. 1918	1*
Royal Tom	3557	1443	Clyde.	2256	1902	James Hanes	Victoria Harbour	F. 1914	1

STORMONT COUNTY.

Bladnoch's Heir	10323	751	Clyde.	788	1907	J. W. Shaver	Avonmore	S. 1916	1
Corporal Charles	2528	5098	St. Br.	5556	1909	J. W. Shaver	Avonmore	S. 1918	1
Crown of Gold	17866	5225	Clyde.	5800	1915	William Crowe	Cannamore	F. 1918	1
Royal Marquis	12063	375	Clyde.	516	1908	W. G. & G. M. Brown	Cornwall	F. 1916	1
Grand Baron Wallace	18334	5192	Clyde.	5630	1916	David Wilson	Cornwall	S. 1918	1*
Count of Cornwall	4516	4468	Per.	4739	1913	Walter Wood	Cornwall	F. 1917	2*
Gex (imp.)	406	1595	Per.	2178	1906	Cloutier Brothers	Crysler	S. 1916	1
Wilkwood C.	2677	5483	St. Br.	1006	1899	John B. Ferguson	Galleringtown	F. 1912	1
Kirkland Chief (imp.)	12207	4938	Clyde.	5442	1908	Nelson McRae	Moose Creek	S. 1917	1
Jasper (imp.)	7972	929	Clyde.	854	1905	William McColl	Northfield Sta.	F. 1914	2
Frisky Hal	032	2875	St. Br.	2193	1910	J. W. Connors	Wales	S. 1918	1*

VICTORIA COUNTY.

Royal Gallant	19226	4956	Clyde.	5411	1914	Dunn Brothers	Bobcaygeon	S. 1919	1
Igne (imp.)	2264	526	Per.	229	1908	Alfred Humphries	Bobcaygeon	S. 1917	1
Lord Rufus (imp.)	5047	2670	Clyde.	3042	1902	Herbert Nichols	Bobcaygeon	S. 1915	1
MacQueen's Crest	4519	2051	Clyde.	1941	1905	Noble Perrin	Cameron	F. 1914	1
Phil (imp.)	16366	4832	Clyde.	5309	1912	M. McPhaden	Cresswell	S. 1919	A1

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VICTORIA COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Jacob (imp.)	3754	2803	Per.	3328	1909	John L. Davis	Dongola	S. 1916	1
Silver Ben	17353	4814	Clyde.	5357	1914	Edward Costello	Downeyville	S. 1919	1
Golden Bloom (imp.)	12233	3417	Clyde.	2390	1906	William Curtin	Downeyville	F. 1914	1
Lawrence Archer	2584	2754	Clyde.	224	1899	William E. Austin	Fenelon Falls	F. 1912	1
Prince George	21541	5423	Clyde.	6009	1916	John Fisk	Fenelon (R.R. 1)	S. 1919	1
Pioneer Captain	19117	5113	Clyde.	5648	1915	William R. Kelly	Fenelon Falls	S. 1918	1*
Golden Gloss	14444	3369	Clyde.	3803	1911	Alfred Tiers	Fenelon Falls	F. 1918	1
The Favourite Knight	6014	4	Clyde.	1314	1903	A. J. Southern	Head Lake	F. 1914	1
Sure Security	15571	4398	Clyde.	4865	1913	Thomas Black	Kirkfield	F. 1917	1*
The Golden Thistle	16035	3671	Clyde.	4145	1912	Howard De Geer	Kirkfield	F. 1918	2
Arthur's Seat (imp.)	12029	338	Clyde.	254	1908	Joseph M. McKenzie	Kirkfield	S. 1916	1
Sir Leonard (imp.)	12108	532	Clyde.	947	1908	John Brock	Lindsay	F. 1916	1
Herman Wenger	2420	4984	St. Br.	5469	1910	Thos. Hodgson	Lindsay	S. 1917	2
Prince of Mertoun (imp.)	9591	364	Clyde.	432	1907	Frank King	Lindsay	F. 1914	1
Borrow Moss (imp.)	228	3539	Hack.	256	1898	Orin Parkin & Alex. Millage	Lindsay	F. 1912	1
Invincible Chattan	17952	4773	Clyde.	5389	1913	George Pogue	Lindsay	S. 1919	1
King of Knights	18847	5364	Clyde.	5795	1916	T. H. Waldon	Lindsay	F. 1918	1
Prince Gartly	10284	581	Clyde.	248	1909	T. H. Waldon	Lindsay	F. 1916	1
Prince Gartly Pride	19236	5363	Clyde.	5794	1916	T. H. Waldon	Lindsay	F. 1918	1
Rufus Darnley	17696	4525	Clyde.	4854	1913	Jackson Brothers	Little Britain	F. 1917	1*
Jerry J.	0101	4419	St. Br.	4926	1913	William Gunn	Norland	F. 1917	1*
Polignac (imp.)	3556	1161	Per.	1620	1901	William Gunn	Norland	S. 1913	1
Sterling Silver	16784	3923	Clyde.	4466	1913	William Gunn	Norland	F. 1918	1
Sir Gregor (imp.)	14756	1345	Clyde.	727	1905	Samuel Fee	Omemee	F. 1914	1
Royal Jester (imp.)	6962	544	Clyde.	431	1904	William Kearns	Omemee (R.R. 1)	F. 1912	1
Duke Royal	16694	4747	Clyde.	5231	1914	Geo. A. McQuade	Omemee	F. 1918	1
Hygrade	19118	5111	Clyde.	5617	1916	Joseph Hicks	Victoria Rd.	S. 1918	1*
Gay Grandeur	6625	1308	Clyde.	1942	1906	William John Wright	Victoria Rd.	F. 1914	1
MacQueen's Crest	4519	2051	Clyde.	1941	1905	Wm. Foster & Henry Bain	West Guildford	F. 1914	1
Pride of the Glen	20709	5243	Clyde.	5791	1916	J. C. McFayden & Son	Woodville	F. 1918	1
Atlantic	17573	4712	Clyde.	5105	1914	Peter Morrison	Woodville	F. 1918	1
Baron MacGregor 2nd	11627	833	Clyde.	1709	1910	Joseph Nugent	Woodville	F. 1918	1

WATERLOO COUNTY.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Pershore (imp.)	801	5000	Thor.	5492	1900	D. R. Boshart	Baden	F. 1917	1
Invetere (imp.)	2367	1073	Per.	348	1908	Geo. H. Schell	Breslau	S. 1915	1
Gold Dust	11820	1648	Clyde.	2339	1910	J. H. Bolender	Elmira	S. 1917	1

Coateswood	822	627	St. Br.	749	1905	Geo. Eisenbach	Elmira	F. 1914	2
Prince of Avon	3962	2529	Clyde.	1759	1902	Daniel Martin	Elmira	F. 1914	1
Commodore A.	212	2466	St. Br.	2711	1909	J. W. Miller	Elmira	S. 1917	1
Lord Macellus (imp.)	15479	2956	Clyde.	3487	1919	J. W. Miller	Elmira	F. 1917	1
Kentucky Todd	1533	5074	St. Br.	5571	1904	Cruickston Stock Farm	Galt	S. 1918	1
Chester Prince (imp.)	12364	1408	Clyde.	2395	1905	D. S. Ferguson	Galt	F. 1914	1
Moncrieffe Prince	13575	2637	Clyde.	2928	1910	George B. Ford	Galt	F. 1917	1
Baron Acme (imp.)	5748	**2103**	Clyde.	2907	**1904**	George B. Ford	Galt	F. 1914	1
Stewart Oro	2511	5277	St. Br.	5775	1916	F. S. Scott	Galt	S. 1919	1
Battle	1826	4885	St. Br.	5431	1908	Miss K. L. Wilkes	Galt	S. 1917	1
Jim Todd	160	3564	St. Br.	3953	1907	Miss K. L. Wilkes	Galt	F. 1914	1
Swinburne (imp.)	15171	**3066**	Clyde.	3433	1909	George Forwell	Hawkesville	S. 1916	1
Mais (imp.)	6056	**4761**	Per.	5323	1912	Titus S. Shantz	Kitchener	F. 1918	1
Knight of Fairview	14155	2473	Clyde.	2742	1910	John & Jos. Eisenmenger	Linwood	F. 1918	1
Athol King (imp.)	9178	140	Clyde.	713	1907	Alfred & James Hewitt	Linwood	F. 1918	A1
Lord Glamis	12593	2661	Clyde.	2016	1909	John Schneider	Linwood	F. 1916	2
Ali	1753	2388	Ger. Co.	526	1905	Gideon Bock	New Dundee	F. 1914	1
Matchless (imp.)	8912	454	Clyde.	1355	1906	Bock & Fried Brothers	New Dundee	S. 1914	1
Roy Charming	11892	4101	Clyde.	4550	1910	Jacob H. Bender	New Hamburg	S. 1919	1
Sturdy Macellus	17910	5056	Clyde.	5609	1915	John G. Dahmer	New Hamburg	S. 1918	1*
Minor Eel	1744	4224	St. Br.	4520	1908	Harry Hartmann	New Hamburg	S. 1915	1
Ethel's Medio	1055	**3366**	St. Br.	2880	1902	Jacob Hoffman	New Hamburg	S. 1915	1
Gold Coin	16684	3879	Clyde.	4450	1912	Jacob Hoffman	New Hamburg	F. 1918	1
Guelph Performer	89	1163	Hack.	1538	1899	Robert Hyde	New Hamburg	S. 1913	1
Scottish Baron (imp.)	4245	2779	Clyde.	2715	1901	D. W. Seyler	New Hamburg	F. 1914	1
Casino	961	1071	Per.	354	1906	Jacob Steinmann & Son	New Hamburg	F. 1914	1
Jouir (imp.)	2921	1072	Per.	353	1909	Jacob Steinmann & Son	New Hamburg	F. 1916	2
Peace Maker	3376	3120	Per.	3643	1912	Jacob Steinmann & Son	New Hamburg	S. 1919	1
Warwick Albert (imp.)	421	2854	Hack.	3304	1904	Harry Wilson	Preston	F. 1914	1
Favourite's Heir (imp.)	4545	322	Clyde.	152	1901	Jacob S. Meyer	St. Clements	F. 1912	1
Fyvie Pearl (imp.)	18263	4959	Clyde.	5372	1914	Jacob S. Meyer	St. Clements	F. 1917	A1*
King Scott	14502	**2740**	Clyde.	124	1908	Adam Scheffner	St. Clements	F. 1916	1
Grey Hawk	272	1164	Per.	1509	1900	Nathaniel Martin	St. Jacobs	S. 1913	1
Lord Myrton (imp.)	14300	852	Clyde.	1748	1910	James Ogram	Wallenstein (R.R. 1)	F. 1918	1
Best Beau	2375	2620	St. Br.	2518	1905	John R. Kaufmann	Waterloo	F. 1914	1
MacQueen of Wellesley	9412	1438	Clyde.	2276	1906	Levi L. Martin	Waterloo	F. 1914	1
Income (imp.)	231	4630	Hack.	2675	1901	Jos. W. Snyder	Waterloo	F. 1914	1
Redmichael (imp.)	7411	117	Clyde.	785	1900	John Sheriffs	Winterbourne	F. 1914	1
Sam's Pride (imp.)	14613	4386	Clyde.	4804	1910	John Sheriffs	Winterbourne	F. 1917	1
The MacQueen	13833	1439	Clyde.	2275	1910	Adam Heipel	Wellesley	S. 1919	1

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WELLAND COUNTY.

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Javalon	5497	5419	Per.	6025	1915	R. E. Kells	Fenwick	S. 1919	2
Prince Keir	12211	2668	Clyde.	3265	1910	F. B. Cooke	Fonthill	S. 1917	1
Galihier (imp.)	2203	2045	Per.	1524	1906	William John Cadwell	Marshville	F. 1914	1
Tuttlebrook Boy	1427	5399	Shire	6034	1916	R. B. Swayze	Marshville	F. 1918	1
Lord Direct	020	1344	St. Br.	814	1901	J. P. Coan	Niagara Falls	F. 1914	1
Clarion De Queuemont (imp.)	317	479	Bel. Dr.	731	1908	Frank M. Sherk	Ridgeway	F. 1916	1
Javelot (imp.)	3834	2878	Per.	3452	1909	Stevensville Horse Syndicate	Stevensville	F. 1916	1
Brigadier General	2235	4768	St. Br.	5345	1912	Robert Bradley	Thorold	S. 1919	2
Prince Alcyoner	1861	4534	St. Br.	5022	1906	Robert Bradley	Thorold	S. 1916	1
Rex Edward	1063	2486	St. Br.	2637	1901	R. L. Dove	Welland (R.R. 2)	F. 1914	1
Kaporal (imp.)	3839	3985	Per.	3382	1910	Ella Farr	Welland	F. 1917	1
Central G.	0103	4529	St. Br.	4976	1902	S. Paonessa	Welland	S. 1916	1

WELLINGTON COUNTY.

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Baron Wallace (imp.)	11104	1771	Clyde.	2370	1905	A. McDonald & Sons	Alma	F. 1914	1
Baron Senwick (imp.)	16408	3866	Clyde.	4221	1911	William Smith & Sons	Alma	F. 1918	A1
Prince Orla (imp.)	4493	1886	Clyde.	2093	1900	W. J. Church	Arthur (R.R. 2)	F. 1914	1
Abdell	1290	2834	St. Br.	1871	1901	Michael Heffernan	Arthur	S. 1915	1
Lord Dewar (imp.)	13973	2067	Clyde.	2655	1910	Michael Heffernan	Arthur	S. 1919	1
Sign of Riches (imp.)	6928	790	Clyde.	1817	1898	Michael Heffernan	Arthur	F. 1914	1
Moncreiffe Charmer	15901	4964	Clyde.	5112	1913	James J. Stack	Arthur	F. 1918	1
Lynal	2898	2273	St. Br.	536	1899	Andrew Esson	Belwood	F. 1912	1
Lord Kimberley (imp.)	6111	2893	Clyde.	3416	1904	Richard McLelland	Belwood	S. 1914	1
All In All (imp.)	11883	1515	Clyde.	535	1908	Cyrus Sargent	Belwood	F. 1916	1
Balcraig (imp.)	6496	563	Clyde.	274	1904	Jacob Maurer	Clifford	F. 1912	1
Donald Davie	17950	5108	Clyde.	5586	1915	Philip Oehm	Clifford	S. 1918	1*
George's Favourite	14716	3135	Clyde.	3580	1912	Louis Wolfe	Clifford	S. 1919	1
Martin Luther	18016	4955	Clyde.	5169	1915	Talbert Ferguson	Conn	S. 1919	1
Red Duke Junior	5863	4485	Clyde.	4855	1903	Wm. McLean	Conn (R.R. 1)	S. 1916	2
Gallant Murray	14583	3008	Clyde.	3363	1910	J. J. Dowling	Drayton	F. 1917	1
Gallant Marion	16924	4946	Clyde.	5321	1914	John Weatherston	Everton	S. 1919	1
Invergowrie (imp.)	11468	320	Clyde.	110	1907	D. Wilkinson & John Ritch	Harriston and Drayton	F. 1914	1
Grandee's First	16633	4689	Clyde.	4871	1914	D. Wilkinson & John Ritch	Harriston and Drayton	F. 1918	1
King's Seal (imp.)	6733	2762	Clyde.	2405	1903	James Brander	Elora	S. 1913	1
Lord Moncreiffe	16363	4082	Clyde.	4619	1911	Hugh Webster	Elora (R.R. 3)	F. 1918	1
Jet (imp.)	2138	1516	Per.	2495	1909	Waldie Steen	Erin (R.R. 1)	F. 1916	1
Lovely Baron (imp.)	8452	1606	Clyde.	2494	1907	Waldie Steen	Erin (R.R. 1)	F. 1914	1

Haussmann	2275	3230	Per.	3684	1907	Thos. B. Broadfoot	Fergus	F. 1914	1
Slow Music	1920	4308	St. Br.	4771	1908	A. Groves	Fergus	S. 1916	1
Cranberry Model	14788	3107	Clyde.	3581	1910	William McLelland	Fergus	F. 1918	1
Baron Columbus (imp.)	6106	749	Clyde.	530	1905	R. C. Rogerson	Fergus	F. 1914	1
Orla Laddie	18626	5273	Clyde.	5774	1916	R. C. Rogerson	Fergus	F. 1918	1
Charming Prince	20671	5279	Clyde.	5885	1915	R. Ballagh & Son	Guelph	S. 1919	1
Benefactor	15296	3367	Clyde.	3830	1911	James Bowman	Guelph	F. 1917	A1
Bright Gem	13213	825	Clyde.	1909	1908	A. E. Currie	Guelph	S. 1918	2
Rattler	921	5472	Shetland	6082	1916	Hastings Brothers	Guelph	S. 1919	1
Whitegate Pimple (imp.)	806	3827	Hack.	4259	1912	Hastings Brothers	Guelph	S. 1919	1
Togo	211	1268	St. Br.	2031	1903	John Devlin	Guelph	F. 1914	1
Netherlea Heir	18308	4772	Clyde.	5386	1915	Richard Dickieson & Son	Guelph	S. 1917	1
Elmoore	3610	1978	Per.	2564	1910	H. S. Leslie & Brother	Guelph (R.R. 2)	S. 1919	1
Isodonte	8920	4898	Per.	5338	1913	J. J. McAninch	Guelph	S. 1919	1
Bonnie Earl (imp.)	15045	3219	Clyde.	3705	1909	Colin Davidson	Harriston	S. 1917	1
Lord Lamond (imp.)	11307	1837	Clyde.	1984	1907	Thos. Harrison & Sons	Harriston	F. 1914	1
Loustic (imp.)	2261	2900	Per.	3467	1911	Thos. Harrison & Sons	Harriston	F. 1918	1
Beith Prince (imp.)	13757	3723	Clyde.	1230	1910	John Wilkin	Harriston	F. 1918	1
Image (imp.)	1659	2387	Per.	2923	1908	Jas. Carmichael & R. Davis	Hillsburgh	S. 1917	1
Ravenscraig (imp.)	16860	4004	Clyde.	4577	1912	D. McKinnon & Sons	Hillsburgh	F. 1918	A1
Charlie Gilbert	360	1171	Thor.	548	1904	Canadian National Bureau of Breeding	Montreal	F. 1912	1
Spey Pearl	780	5202	Thor.	5728	1913	Canadian National Bureau of Breeding	Montreal	S. 1918	A1
Cyllene (imp.)	13908	1286	Clyde.	1997	1907	Geo. W. Arnold	Mount Forest	F. 1914	1
St. Boswell (imp.)	4373	1775	Clyde.	2522	1901	Neil A. Brown	Mount Forest	S. 1914	1
Duke John (imp.)	12377	1474	Clyde.	2357	1910	John Gilsdorf	Mount Forest	F. 1918	1
The Bison	279	3577	St. Br.	546	1899	M. J. O'Connell	Mount Forest	F. 1914	1
Scotland's Peer (imp.)	7650	2213	Clyde.	1913	1905	Colin Ray	Mount Forest	S. 1915	1
Lord MacQueen	5452	3222	Clyde.	1460	1905	William Fleet	Palmerston	F. 1914	1
Brookfield Laddie	579	1465	Hack.	2205	1906	J. F. Husband	Rockwood	F. 1914	1
Prince of Craigton (imp.)	11482	4003	Clyde.	4487	1909	J. F. Husband	Rockwood	F. 1916	1
King of Wellington	19633	5318	Clyde.	5947	1916	W. J. Monkman & Son	Rockwood	S. 1919	1
Right Forward 2nd	20569	5173	Clyde.	5744	1913	Jos. Thompson	Rockwood	S. 1918	1*
Intro (imp.)	1589	2334	Per.	2994	1908	W. H. Rothwell	Rothsay (R.R. 1)	S. 1916	1
Montrave Ronald (imp.)	10077	1432	Clyde.	2092	1898	Fred J. Wilson	Rothsay	F. 1914	1
William of Waterloo	20477	5471	Clyde.	6078	1915	Alexander Hahn	Wallenstein	S. 1919	1

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WENTWORTH COUNTY.

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Majestic Baron (imp.)	13816	1522	Clyde.	1157	1905	Joseph Hutty	Binbrooke	F. 1914	1
Ranchman	6905	5484	Per.	4012	1914	R. L. Dyment	Copetown	S. 1919	1
Dominion Boy	975	1920	St. Br.	1728	1899	George Bickell	Dundas	F. 1914	1
Peerless	4816	5084	Per.	5637	1915	A. H. Lyons	Dundas	S. 1918	1*
Brahmin (imp.)	14087	2304	Clyde.	2986	1910	Donald C. Stewart	Dundas	F. 1918	1
Prince Ascot (imp.)	8458	342	Clyde.	279	1906	William Woodley & Sons	Dundas	S. 1915	1
Infernal (imp.)	1583	1926	Per.	1437	1905	Thos. W. Smith	Glanford Sta.	S. 1919	1
Judson MacQueen	12244	4935	Clyde.	5381	1910	J. C. Bowman	Hagersville (R.R. 1)	S. 1917	1
Bezant (imp.)	318	5077	Thor.	5589	1907	Sir John Hendrie	Hamilton	S. 1918	1
The Star Patchen	040	651	St. Br.	736	1903	W. W. Brigham	Hannon	F. 1914	1
Robert De Marcq (imp.)	816	3433	Bel. Dr.	106	1900	I. L. Martin	Hannon	F. 1912	2
Mr. Templeton	1010	2139	St. Br.	2131	1908	William Martin	Hannon	F. 1916	2
Oro Ree	1144	2783	St. Br.	1291	1901	Francis G. Green	Stoney Creek	F. 1914	1
Charming Pride	17916	5214	Clyde.	5757	1915	Thos. Poulton	Troy	S. 1918	1*
Raith Standard (imp.)	16108	4238	Clyde.	4702	1913	Jas. D. Weatherston	Troy	S. 1919	1
Lord Ryckman	021	2843	St. Br.	3414	1910	C. B. Butler	Vinemount	F. 1918	1
Gay Ronald	15342	4218	Clyde.	4368	1913	G. E. Hildreth	Vinemount	F. 1918	A1
Kanak (imp.)	2836	2918	Per.	3422	1910	Arthur J. Kenyon	Vinemount	S. 1918	1

YORK COUNTY.

Archer of Glencairn	19222	5345	Clyde.	5938	1916	Laurie Brothers	Agincourt	S. 1919	1
Sir Shapely	19254	4933	Clyde.	5405	1914	Laurie Brothers	Agincourt	F. 1918	1
Surname's Pride	16459	4749	Clyde.	4898	1914	Laurie Brothers	Agincourt	S. 1918	1*
Dunure Gulf Stream (imp.)	16859	4005	Clyde.	4578	1910	Patterson Brothers	Agincourt	F. 1918	A1
Bingen Pilot	264	1309	St. Br.	519	1902	Geo. A. McQuibban	Alma	F. 1912	1
Donald Sprig	20566	5387	Clyde.	5615	1916	Geo. Cutting & Son	Aurora	S. 1919	2
Prince Togo (imp.)	8788	717	Clyde.	1234	1901	G. H. & D. Whitmore	Aurora	F. 1912	1
Bouncing Geordie (imp.)	14581	873	Clyde.	1646	1909	Henry Shaw	Belhaven	F. 1916	1
Elgin Chief	20588	5178	Clyde.	5662	1916	Jos. Burnett & Sons	Elgin Mills	S. 1918	1*
Solidity (imp.)	18367	4839	Clyde.	5362	1913	D. Howard & J. Eby	Fairank	F. 1918	A1
Cornton Gay Lad	14753	3022	Clyde.	3588	1910	Robert Carlisle	Gormley	F. 1918	1
Chieftain	4583	4488	Per.	4845	1914	Wm. A. Henry & Son	Keswick	F. 1917	1*
Lord Greffier	5679	5270	Per.	5509	1916	Wm. A. Henry & Son	Keswick	F. 1917	1*
Lord Keswick	5678	5269	Per.	5508	1916	Wm. A. Henry & Son	Keswick	F. 1917	1*
Bonnie Boy	20506	5437	Clyde.	6024	1917	Jos. Cutting & Sons	Kettleby (R.R. 1)	S. 1919	1
Freehold (imp.)	680	755	Hack.	1362	1902	R. W. Dove	Kettleby (R.R. 1)	S. 1919	1
Elderslie (imp.)	9329	1306	Clyde.	1946	1907	Richard Harman	King	F. 1914	1

Byron Derby	17657	5021	Clyde.	5236	1913	Jas. B. McClure	King	F. 1918	1
Victor Hugo	13464	802	Clyde.	1824	1908	W. J. Wells & Son	King	F. 1916	1
Chief of Frontview	5106	2781	Clyde.	2931	1904	Samuel Cave	Kleinburg	S. 1916	2
Regent Donald	20304	5179	Clyde.	5667	1915	Alfred Boucock	Lansing	F. 1918	A1
Right Forward	4363	3915	Clyde.	2767	1901	W. D. Forster & G. R. Cowie	Markham	S. 1915	1
Autumn Boy	8300	5289	Per.	5872	1910	T. H. Hassard	Markham	F. 1918	1
Cairson	19697	5283	Clyde.	5784	1915	T. H. Hassard	Markham	F. 1918	1
Dapple Boy	8059	5264	Per.	5865	1909	T. H. Hassard	Markham	F. 1918	1
Jasin (imp.)	2335	721	Per.	1280	1909	T. H. Hassard	Markham	F. 1916	1
Macaroon's Prince	16505	5285	Clyde.	5841	1914	T. H. Hassard	Markham	F. 1918	1
Monogram	8304	5288	Per.	5871	1913	T. H. Hassard	Markham	F. 1918	A1
Mulet (imp.)	8306	5286	Per.	5866	1912	T. H. Hassard	Markham	F. 1918	1
Netherby (imp.)	11778	1332	Clyde.	1822	1908	T. H. Hassard	Markham	S. 1916	1
Nigby Boy	8285	5287	Per.	5868	1915	T. H. Hassard	Markham	F. 1918	A1
Peter Wilton	858	775	St. Br.	1489	1905	T. H. Hassard	Markham	F. 1917	A1
Pride of Dunedin	17299	5145	Clyde.	5707	1915	T. H. Hassard	Markham	S. 1918	1*
Prince Ideal	38	1739	St. Br.	1196	1901	T. H. Hassard	Markham	F. 1912	1
Royal Hopewell	18556	5284	Clyde.	5789	1916	T. H. Hassard	Markham	F. 1918	1
Royal Marathon	19471	5263	Clyde.	5449	1916	T. H. Hassard	Markham	F. 1918	1
Royal Review (imp.)	279	722	Hack.	1194	1904	T. H. Hassard	Markham	F. 1912	1
The Count of Hillcrest	15774	4502	Clyde.	4960	1913	T. H. Hassard	Markham	F. 1917	A1*
Hanoi (imp.)	1555	1840	Per.	2272	1907	W. H. Johnson	Markham	F. 1914	1
Captain Bryson	1661	3119	St. Br.	904	1900	H. C. Reesor	Markham	F. 1912	1
Baron Alton (imp.)	15295	3118	Clyde.	3622	1911	James Torrance	Markham	F. 1918	A1
Baron's Court	18366	4759	Clyde.	5379	1911	James Torrance	Markham	F. 1918	A1
Green's Favourite (imp.)	19656	5034	Clyde.	5584	1914	James Torrance	Markham	F. 1918	A1
Pearl Prince (imp.)	19657	5033	Clyde.	5583	1912	James Torrance	Markham	F. 1918	A1
Shannon Bank Mack	16548	4710	Clyde.	4961	1914	W. H. Tran	Markham	F. 1917	1*
Prince of Kinellar	16723	5354	Clyde.	6003	1914	J. W. Tooley	Milliken	S. 1919	1
Black Benedict (imp.)	3563	2262	Clyde.	2730	1900	Herbert Foote	Mt. Albert	S. 1916	1
Bonnie Solway (imp.)	15293	2939	Clyde.	3483	1911	W. J. Oldham	Mt. Albert	F. 1918	A1
Ouse Bridge Champion	552	593	Shire	444	1906	Amos Agar	Nashville	S. 1915	1
Kilwinning Jock (imp. in dam)	16945	4565	Clyde.	5047	1914	G. A. Brodie	Newmarket	F. 1918	1
Harley (imp.)	3826	2901	Per.	898	1902	Ebenezer Randall	Newmarket	F. 1912	1
Knights Differ	308	4281	Thor.	4776	1909	Jas. C. Fletcher	Newtonbrook	S. 1916	1
Morven Awake	21214	5274	Clyde.	5944	1917	William Robinson	Newtonbrook	S. 1919	1
Nesbitt MacQueen	14643	782	Clyde.	1498	1906	W. J. Hudgins	Oak Ridges	F. 1914	1
Clarion (imp.)	15146	2922	Clyde.	3437	1910	Charles Wice	Painswick	F. 1917	A1
Cruickston	1012	2266	St. Br.	2436	1903	Edward Meehan	Pefferlaw	F. 1914	2
Prince of Orange (imp.)	7848	2184	Clyde.	1212	1905	Charles Stiles	Pefferlaw	S. 1915	1
Black Gregor (imp.)	19658	5026	Clyde.	5554	1915	John A. Boag & Son	Queensville	F. 1917	A1*

*Horse requires inspection; Owner should look up route of Inspectors and present stallion at his nearest Inspection point at time stated.

YORK COUNTY—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert
Dalziel (imp.)	10626	3406	Clyde.	2442	1903	John A. Boag & Son	Queensville	F. 1918	A1
Baron Fullarton	21532	5400	Clyde.	6038	1916	J. B. Cowieson & Sons	Queensville	S. 1919	1
Lord Morven (imp.)	11457	1349	Clyde.	1903	1908	J. B. Cowieson & Sons	Queensville	F. 1916	1
Ecureuil (imp.)	746	1150	Per.	1957	1904	William G. Hill	Queensville	F. 1917	A1
Buchez (imp.)	4615	1346	Per.	445	1901	H. Hulse & Chalmer Black	Queensville	F. 1912	1
Kendale	20101	5100	Clyde.	5639	1915	F. A. Smith	Queensville	S. 1918	1*
Watnall King	1102	3123	Shire	3667	1912	J. B. Clark	Ravenshoe	F. 1918	1
Gallant Kyle	7959	1632	Clyde.	642	1906	Henry Smith	Ravenshoe	F. 1914	1
Lambton (imp.)	15299	2845	Clyde.	3400	1911	John Fisher	Ringwood	F. 1918	A1
Lambton's Heir	19587	5009	Clyde.	5549	1916	John Fisher	Ringwood	S. 1918	1*
Bethesda's Pride	15755	4200	Clyde.	4669	1913	A. Sherrick	Ringwood	F. 1918	1
Admiral of Hillcrest	18356	5369	Clyde.	5879	1916	Henry A. Mason	Scarboro	F. 1918	1
Colonel of Hillcrest	17335	5085	Clyde.	5640	1915	Henry A. Mason	Scarboro	S. 1918	1*
De Wilton (imp.)	634	3088	Hack.	3620	1906	Henry A. Mason	Scarboro	F. 1917	A1
Prince	1634	1517	Per.	2341	1909	F. Vivian	Scarboro Jct.	F. 1916	1
Gay Sprig (imp.)	7270	539	Clyde.	1495	1904	R. L. Graham	Schomberg	F. 1914	1
Baron Minto (imp.)	13980	3877	Clyde.	4257	1906	James Leonard	Schomberg	F. 1914	A1
Bay Bob	20587	5271	Clyde.	5908	1917	Allan F. Shaw	Sharon	S. 1919	1
Roy Carruchan	20787	5359	Clyde.	5972	1913	A. J. Brown	Stouffville	S. 1919	1
Netherby Hero (imp.)	15792	3324	Clyde.	3804	1912	Robert H. Spofford	Stouffville	F. 1918	1
Mac Brino	2950	5468	St. Br.	6093	1915	Peter Wideman	Stouffville	S. 1919	1
Sir Leopold (imp.)	9747	1908	Clyde.	2307	1901	Charles Park	Sutton West	F. 1914	1
Baron Temple	16342	3752	Clyde.	4280	1911	T. H. Legge	Temperanceville	F. 1918	A1
Sir James of Alton (imp.)	17283	4474	Clyde.	4968	1910	T. H. Legge	Temperanceville	F. 1917	A1
Proud Chieftain (imp.)	9684	142	Clyde.	735	1906	Cameron & Company	Thistletown	F. 1914	1
Centeur (imp.)	481	4300	Fr. Co.	772	1902	Joseph Frost	Thistletown	S. 1916	1
Calgary	410	4285	Thor.	4808	1910	Thorncliffe Stables	Todmorden	F. 1917	1
First Sight	409	3936	Thor.	4346	1910	Thorncliffe Stables	Todmorden	S. 1917	2
Nealon	680	3455	Thor.	3777	1903	Thorncliffe Stables	Todmorden	S. 1915	1
Orme Shore (imp.)	701	3545	Thor.	2914	1901	Thorncliffe Stables	Todmorden	S. 1913	1
Chilcoot	1365	5322	St. Br.	5496	1912	C. A. Burns	Toronto	F. 1917	1*
Jupiter (imp.)	1998	3436	Per.	3788	1905	M. Cockburn	Toronto, 333 Main St.	F. 1914	1
Burt Axworthy	1845	4286	St. Br.	4774	1908	T. A. Crow	Toronto	F. 1917	A1
John R. Hal	0100	4805	St. Br.	4773	1907	T. A. Crow	Toronto	S. 1916	1
Warwick Model (imp.)	304	2773	Hack.	2407	1902	T. A. Crow	Toronto	S. 1913	1
Reminder (imp.)	18265	4800	Clyde.	5374	1914	L. M. Davies & H.M.Robinson	Toronto	S. 1919	1
Lord Regent	1413	3717	St. Br.	4229	1912	Thos. Maddaford	Toronto	S. 1919	1
Warwick Hero	575	3127	Hack.	3676	1908	A. V. Tinney	Toronto	S. 1915	1

Rose Victor (imp.)	12488	212	Clyde.	1202	1909	The Mounce Co., Ltd.	Toronto	F. 1917	1
Dunure Captain (imp.)	14126	1299	Clyde.	1961	1910	A. Gormley	Unionville	F. 1918	A1
Dunure Lucky Star	15379	3335	Clyde.	3740	1911	A. G. Gormley	Unionville	F. 1918	A1
Golden Price	18871	5309	Clyde.	5909	1916	Edward M. Meyer	Unionville	S. 1919	1
Westlothian (imp.)	6753	1298	Clyde.	1962	1902	F. H. Quantz	Unionville	S. 1915	1
Hartington (imp.)	19655	5032	Clyde.	5552	1915	J. M. Gardhouse	Weston	F. 1917	A1*
Croton Forest King	1222	4725	Shire	5207	1915	John Gardhouse & Sons	Weston	F. 1918	A1
Bonaday	1478	4766	St. Br.	5329	1907	F. J. Hassard	Weston	F. 1918	A1
Guedo (imp.)	2546	1692	Per.	1897	1906	William Pears	West Toronto	S. 1915	1
Port De Lion	1888	5310	Bel. Dr.	5932	1912	David Huson	Woodbridge	S. 1919	1
Lockwood Pride	20757	5239	Clyde.	5857	1916	John Johnston	Woodbridge	F. 1918	1
Dandy	5542	4736	Per.	5205	1914	R. H. Livingston	Woodbridge	F. 1918	A1
The Principal	859	1813	St. Br.	1308	1901	W. H. O'Dell	Woodbridge	F. 1914	1

NEW ONTARIO.

ALGOMA.

Luis 2nd	3431	2062	Per.	2541	1910	Geo. W. Bridges	Barrie Island	S. 1918	1
Winona G.	171	1437	St. Br.	2145	1909	P. J. McAvoy	Bruce Mines	F. 1916	1
Frank	524	4127	Per.	4379	1906	J. J. McPhail	Bruce Mines	S. 1918	A1
Marquis (imp.)	3554	1581	Per.	240	1903	J. J. McPhail	Bruce Mines	F. 1914	1
Joe Stanton	2461	4668	St. Br.	4852	1905	J. J. Wright	Carterton	S. 1916	1
Pearl Gife (imp.)	16085	3296	Clyde.	3157	1904	George Strain	Gore Bay	F. 1914	1
Clifton Swell (imp.)	13285	1125	Clyde.	1246	1909	John Balentine	Hilly Grove	F. 1916	1
Walter Cavell	2897	5154	St. Br.	5720	1915	Wallace McConnell	Kagawong	S. 1918	1*
King Patch 2nd	1520	4651	St. Br.	4857	1913	Wallace McConnell	Kagawong	S. 1918	1*
Gnome (imp.)	806	1969	Per.	2600	1906	Khull Brothers	Laird	F. 1914	1
Gazon (imp.)	29	3802	Fr. Co.	4175	1906	W. J. Nott	MacLennan	F. 1914	1
Sylvander's Favourite	15348	5456	Clyde.	6021	1913	W. J. Nott	MacLennan	S. 1919	A1
Baron Stirling 2nd	10434	3787	Clyde.	4123	1906	Wm. Hembruff	Manitowaning	F. 1914	1
Lord Helsington (imp.)	9802	928	Clyde.	1190	1905	S. J. Bradley & John Stewart	Manitowaning	F. 1914	1
Superior II.	3802	3978	Per.	4418	1908	Massey Per. Horse Company	Massey	S. 1918	A1
Stirling Prince Thomas	17935	5454	Clyde.	5686	1915	John T. Love	Mindemoya	S. 1919	1
Richard Dare	1691	3865	St. Br.	4122	1910	Cephas Broad	Rydal Bank	S. 1917	1
Sphinxmore Jr.	981	3935	St. Br.	852	1902	David H. Law	Sault Ste. Marie	F. 1912	1
Dazzle Patch	0134	5161	St. Br.	5743	1909	William O'Brien	Sault Ste. Marie	S. 1918	1
Innes Pride (imp.)	11790	4149	Clyde.	4589	1908	George Wilding	Sault Ste. Marie	S. 1915	2
Cashier Pride	18073	5159	Clyde.	5741	1915	John Wilding	Sault Ste. Marie	S. 1918	1*

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ALGOMA—*Continued.*

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Baron Knight	14176	1664	Clyde.	2520	1909	Wilmot Blackie	Spring Bay	S. 1918	1
Calgary	1348	5184	St. Br.	5732	1909	A. D. Maitland	Webbwood	S. 1918	1
Hindman's Perfection 2nd	3621	4049	Per.	4295	1911	The Wharncliffe Percheron Horse Co.	Wharncliffe	S. 1918	1
HALIBURTON.									
Prince of Willowbrook	2285	3196	Per.	3538	1911	Sydney Johnston	Donald	S. 1918	1
Acme 2nd	11413	1526	Clyde.	2105	1910	Fred. R. McElwain	Gelert	S. 1917	2
Baron Flush	9207	599	Clyde.	429	1906	T. Cunningham	Hotspur	F. 1914	1
Acme Prince 2nd	16735	4452	Clyde.	4769	1913	Samuel Redner	Minden	F. 1917	1*
Freier	73105	3543	Ger. Co.	3840	1905	George Barry	West Guildford	S. 1916	1
MUSKOKA.									
Black Stamp (imp.)	13149	1253	Clyde.	2021	1910	Leishman & Watson	Bracebridge	S. 1918	1
Castelar King	3619	3683	Per.	4130	1910	Fred Morris & Jas. Carson	Bracebridge	S. 1918	1
Bonnie Prince Charley	9717	1636	Clyde.	464	1909	Wesley Morrow	Muskoka Falls	F. 1916	1
Bonnie Dee (imp.)	13316	3670	Clyde.	4141	1911	W. F. Somerset	Port Sydney	S. 1918	1
Geneva King	6009	5216	Per.	5764	1916	R. W. Colson	Uffington	S. 1918	2*
NIPISSING.									
Handsome Prince	21210	5398	Clyde.	6017	1916	W. Beaulieu	Bigwood	S. 1919	2
Acadien 2nd	506	5104	Fr. Can.	5499	1903	Roy W. Meadows	Feronia	F. 1917	2
Henri (imp.)	2246	3829	Per.	4030	1907	Edgar Gagne	Field	F. 1914	1
Thistle 2nd	16756	5445	Clyde.	6014	1914	John Pastway	Madawaska	S. 1919	1
Jouciguy	6750	5455	Per.	5969	1916	Louis Decicco	North Bay	S. 1919	1
Monteith Baron	17174	5459	Clyde.	6094	1915	Lionel Sequin	St. Charles	S. 1919	1
Prince Arbroath	14551	3687	Clyde.	4063	1907	Roderick Steep	Verner	F. 1914	1
PARRY SOUND.									
Flash Lightning	653	3035	Hack.	3536	1908	W. Raaflaub & Aylmer Keetch	Burks Falls	F. 1916	1
Baron Thomas	9005	2449	Clyde.	3146	1908	Hugh & Joseph Varcoe	Burks Falls	S. 1916	1
King Brunstane	11818	1301	Clyde.	1953	1910	Hiram Perry	Callander	S. 1917	1
Norland	8862	52	Clyde.	257	1907	Dan Gee	Golden Valley	S. 1915	1

Devitt's Bonny	2830	3986	Clyde.	4144	1900	John A. Smith	Loring	S. 1915	1
Royal Range	14427	1591	Clyde.	2368	1910	John W. Johnston	Midlothian	S. 1919	1
Lacis (imp.)	3857	3016	Per.	3561	1911	John Woods	Parry Sound		1
Baron Darnley	17902	5095	Clyde.	5607	1915	William Unger	South River	S. 1918	1*
Major Cormier	3742	4334	Per.	4733	1913	William Unger	South River	F. 1917	1*
Blacksmith Boy	11905	3667	Clyde.	4134	1910	William McCron	Sprucedale	F. 1917	1
Rosseau Pride	18029	5457	Clyde.	6043	1915	Henry J. Stoneman	Turtle Lake	S. 1919	1
Viscount Humphrey (imp.)	15292	3255	Clyde.	3721	1910	W. H. Martin	Rosseau	F. 1918	1

RAINY RIVER DISTRICT.

Sir Reubin	12109	3955	Clyde.	4128	1908	Charles Fisher	Emo	S. 1915	1
Landiston	3136	5144	Per.	5656	1910	R. W. McEachern	Emo	S. 1918	1
Terrington Cleophas (imp.)	335	3997	Hack.	4545	1904	W. G. Wilson	Emo	S. 1915	1
Orozco	6855	3938	Per.	4519	1911	Angus Shaw	Fort Frances	F. 1917	A1*
Golden Stately	12985	4113	Clyde.	4472	1909	James B. Cook	Rainy River	F. 1916	1

TIMISKAMING DISTRICT.

Baron Everard (imp.)	15223	3449	Clyde.	3894	1911	George Tough	Charlton	S. 1918	1
Grey Napoleon	4558	4007	Per.	4408	1912	George Tough	Charlton	S. 1918	1*
Bruno Brino	2571	2519	St. Br.	3219	1906	G. B. Neaveua	Earlton	S. 1915	1
Prince Royal 2nd	879	4477	Fr. Can.	4831	1910	Thos. Martin	Kirkland	F. 1917	1
Jobard (imp.)	2208	1097	Per.	919	1909	Archie Cameron	New Liskeard	F. 1916	1
Arion King	986	2324	St. Br.	186	1899	Charles Chadwick	New Liskeard	F. 1912	1
Jade (imp.)	2206	1342	Per.	1543	1909	James Foley	New Liskeard	S. 1917	A1
Royal Kippen (imp.)	3996	3994	Clyde.	4435	1901	M. J. Guinane	New Liskeard	S. 1915	1
Gartly Morgan	17860	4859	Clyde.	5393	1912	Robt. Montgomery	New Liskeard	S. 1918	1*
Gambert (imp.)	403	2376	Per.	1839	1906	Wm. Gordon	Porquis Jct.	F. 1914	1
Geranium (imp.)	9166	4671	Per.	4986	1904	Henry Taylor	Thornloe	S. 1916	1
Lindenwold Warrior (imp.)	1166	3456	Shire	3901	1908	A. Bailey	Earlton	S. 1915	1

THUNDER BAY DISTRICT.

Brilliant	3573	1175	Per.	320	1905	T. P. Kelly	Fort William	S. 1915	1
The Wilkmer	196	4329	St. Br.	4537	1909	James Tonkin	Fort William	S. 1918	1

SUDBURY.

Grimpant	1527	3755	Per.	4107	1906	Adelard Chenier	Chelmsford	F. 1914	1
Baron McPherson	321	2268	St. Br.	312	1910	T. C. Young	Sudbury	S. 1918	1

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PROVINCE OF QUEBEC.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Despot (imp.)	10909	656	Clyde.	819	1909	George Fraser	Beech Grove	S. 1917	1
Johnston Chief (imp.)	12138	2731	Clyde.	2970	1906	George Fraser	Beech Grove	S. 1915	1
Captain Flush	17102	4403	Clyde.	4881	1913	Angus A. McDonald	Dalhousie Sta.	F. 1917	1*
Sylvio (imp.)	13905	765	Clyde.	1443	1907	Napoleon LaFrance	Demers Centre (R.R. 1)	S. 1915	1
Garcin (imp.)	1562	3362	Per.	2245	1905	Howard M. Barber	Gatineau Point	F. 1914	1
Valjean	150	2154	Thor.	2876	1906	Canadian National Bureau of Breeding	Montreal	S. 1915	1
Komb (imp.)	4463	5355	Per.	4082	1912	Thomas Canavan	Poltimore	S. 1919	1
Directum Pilot	1960	5374	St. Br.	5991	1913	Thos. Earl Cotie	Shawville	S. 1919	1
Union Parole	1216	4854	St. Br.	5216	1905	Adelard Chevrier	Vaudreuil Sta.	F. 1916	1

OUTSIDE POINTS.

Name of Stallion.	Can. Rec. No.	Enrolment No.	Breed.	Fyle No.	Date of Birth.	Name of Owner.	Address.	Date of Insp.	Form of Cert.
Baron's Footprint	20674	5256	Clyde.	5917	1916	William Brice	Cupar, Sask.	S. 1919	1
Tom Miln	18774	4763	Clyde.	5279	1914	William Brice	Cupar, Sask.	S. 1919	1
Lookout 2nd	18288	5081	Clyde.	5634	1916	Vanstone & Rogers	North Battleford, Sask.	S. 1918	1*
Rex	4991	1990	Mor.	2536	1900	John & Robt. Keyes	Carlton Hill, Alta.	F. 1914	1
Pilot of Glencairn	15126	3685	Clyde.	4152	1912	J. J. Bell	Islay, Alta.	F. 1918	1
Panama (imp.)	1471	3188	Per.	205	1904	Jas. L. Lougheed	Veteran, Alta.	F. 1914	2

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HEREDITARY UNSOUNDNESS.

C. D. McGilvray, V.S., M.D.V., Principal Ontario Veterinary College,
Toronto.

The enrolment of stallions for public service has for its attainment the improvement of horse breeding through a standard of qualification for sires.

To accomplish the desired purpose the enrolment requirements are designed so as to eliminate as far as possible from public service stallions of undesirable type and poor conformation and to discourage the use of unsound sires likely to transmit their defects. The disqualifying forms of unsoundness are those considered to be of a hereditary nature, meaning an inherent diathesis or predisposition to defects likely to be transmitted to the progeny, thus interfering with their usefulness and lessening their value. In general experience it is found that an unsoundness present in a horse with structural weakness and poor conformation is very likely to be hereditary. In examining stallions for enrolment the following described diseases or defects should be thoroughly understood and carefully considered.

Bone Spavin or Jack Spavin. This is a bony deposit forming an enlargement which is noticeable usually at the inner and lower part of the hock. A spavin is always an unsoundness, as it may cause lameness at any time. Certain formations of hock are predisposed, particularly those which are small and weakly supported. The hereditary tendency to bone spavin is beyond doubt, and it is therefore always considered as a disqualifying unsoundness in stallions.

Bog Spavin. Is a soft swelling or puffy enlargement occurring on the front and inner part of the hock. It is due to the capsule of the joint being overdistended with the synovial fluid or joint oil. It does not always cause lameness, but is an unsightly defect in any case. In some strains of horses there is a decided tendency to bog spavin. It should be considered as a disqualifying unsoundness when present in stallions with short weak hocks, or those which are bent or otherwise faulty in shape. Slight puffs on well formed hocks occurring only after considerable use at service or work, and after the age of eight years, need not always prevent qualification, as there may not be any undue hereditary tendency.

Thoroughpin. This name is given to a puffy swelling at the upper and back part of the hock. It is due to an overdistension of the tendon sheath with fluid, and can be pressed through from side to side of the hock, hence the term thoroughpin. It does not always cause lameness, and is most liable to occur in short "beefy" upright hocks, and is frequently associated with bog spavin. They are regarded as hereditary, unsightly defects to the same degree as bog spavin.

Curb. This term is applied to a swelling or thickening on the back border of the hock about six inches below its point. This thickened condition of the ligament or tendon is noticeable in the deviation of the straight line that extends downwards from the back of the hock. Long, narrow, bent or sickle shaped hocks are known as curby hocks, and are very liable to spring a curb. Legs of this kind affected with curb constitute an unsoundness liable to be transmitted to the progeny, and a stallion so affected should be disqualified. A slight curb on a strong, well formed hock need not always prevent qualification.

Stringhalt. Is also termed Chorea, and is manifested by a peculiar spasmodic jerking upwards of one or both hind legs. The peculiar jerking movement may be slight or decidedly noticeable when the horse is either walking, trotting, turning or backing up. Some horses only show it when first exercised, and after a time drive out of it on becoming warmed up, while in other cases it persists irrespective of the amount of exercise. The true cause of stringhalt it not known. To detect stringhalt often requires careful examination and close observation of the horse in all its movements. Stallions showing decided stringhalt should be disqualified, as it is a form of unsoundness with a decided tendency towards being manifested in the progeny.

Ring-Bone. This name is applied to a bony growth forming an enlargement extending around the pastern. It may affect either the front or hind pasterns and frequently causes lameness which persists. Faulty pasterns are a predisposing cause, and in this regard very long weak pasterns and very short upright pasterns are both inclined to the occurrence of ring-bone. It is one of the most serious forms of unsoundness and the hereditary tendency is acknowledged so that stallions affected with ring-bone should be disqualified.

Side-Bone. This name is given to a hardened condition or ossification of the lateral cartilages, which are thin plates of gristle situated on each side of the foot to permit expansion at the sides of the hoof head. When they become hardened their flexibility is destroyed, thus preventing expansion and causing lameness in many cases. There is a decided hereditary tendency to the formation of side-bone, particularly in some of the heavy breeds, especially those with coarse legs or which have low, weak heels and flat spreading feet. The hereditary predisposition is confirmed by the occurrence of side-bone in a large percentage of the progeny from certain sires, and its appearance in young horses before they have commenced to work. Side-bones generally affect the front feet and are very liable to cause lameness in horses when used for work on paved streets and hard roads. In examining for side-bone each side of the foot should be pressed firmly with the fingers, and if the cartilages are sound they will be small and pliable. When side-bone is present the cartilages are enlarged and hard and do not yield to pressure. Side-bone is considered as an hereditary unsoundness in stallions.

Navicular Disease. This is a disease which affects the front feet and is commonly known as coffin-joint lameness. It consists of an inflammation affecting the structures connected with the coffin joint of the foot. There seems to be an hereditary predisposition to this trouble in certain individual animals of the lighter breeds of horses. The hereditary tendency probably depends largely on peculiarities of conformation, such as narrow, contracted, weak heels or extremely high heels, long toes and poor pasterns. It causes a very serious lameness which persists and is difficult to overcome. To detect this disease requires careful examination of the feet and close watch as to the position in which the feet are kept when standing and the manner in which the horse walks and trots. When standing the lame foot is usually kept slightly in front of the other which is referred to as "pointing." The affected foot also appears smaller, being contracted at the heels, and the frog appears shrunken. In walking, the step is short and stubby and at the trot he goes stiffly and "digs his toes" to keep pressure off the heels, causing him to stumble sometimes. Navicular disease is a disqualifying unsoundness.

Periodic Ophthalmia. This is a disease of the eyes and is commonly known as moon-blindness. When the eyes become affected with this disease periodical inflammation occurs which finally results in the horse becoming blind. When the eye is first affected it becomes inflamed and sensitive with an abundant secretion of tears and watery discharge. With succeeding attacks the eyeball becomes cloudy and the sight is gradually destroyed. When this takes place the eyeball gets smaller and appears sunken and the upper eyelid is very much wrinkled. The exact cause of this disease is not definitely known, but the hereditary predisposition is accepted and as a result in many countries stallions affected with this trouble are disqualified. In France they are particularly strict in the examination of the eyes of stallions for periodic ophthalmia and cataract.

Roaring. This term is applied to horses which breathe with a loud unnatural sound when they are exercised. As a rule the sound is only produced when the horse is sharply exercised and subsides when the animal is at rest or moving slowly. Owing to the differences of sound made by horses "affected in their wind" the following distinguishing terms are used:

1. *Grunter*: This term is applied to a horse which grunts when struck or threatened, as by a jab on the lower ribs, and is always very suggestive of a possible roarer. Such a horse should be carefully examined for roaring.

2. *Wheezer*: This term is applied to the wheezing sound which is generally made by horses when they are affected with heaves or broken wind.

3. *Whistler or Piper*: This term is applied to a shrill blowing noise made by some horses when in high fettle and from an acquired habit or playful flapping of the false nostril. This sound should not be confounded with true roaring. The differences are that the noise of a high blower always disappear when the animal is put to the top of his speed, while in cases of true roaring the sound would be increased and the breathing further aggravated with increased exertion. In cases of true roaring the sound is produced as a result of an obstruction or narrowing of the laryngeal passages or "throttle" at the upper end of the wind pipe, and which interferes with the free passage of air for rapid breathing. In testing a horse for roaring, he should first be tried for grunting by jabbing him on the ribs. He should then be exercised at top speed for ten or fifteen minutes, and then suddenly brought to a standstill close to the examiner so that he can listen to the breathing. If the horse is a roarer there will be a distinct noise heard in the breathing and the nostrils will appear dilated or wide open. By allowing the animal to stand quietly the noise gradually subsides and the nostrils become smaller. Roaring is always an unsoundness, but its hereditary nature is now being disputed. This is owing to the fact that in many cases roaring occurs after an attack of Influenza and Strangles, causing an enlarged condition of certain glands which by pressing on a nerve known as the left recurrent laryngeal nerve results in paralysis of the vocal cords. In some cases roaring follows an attack of sore throat causing a thickening of the vocal cords. Another thing to be considered is that many cases of roaring can be relieved by an operation on the larynx, and as a result the horse may then be apparently sound, in that the breathing is normal. The view is becoming more generally accepted that roaring is in many cases a secondary condition following attacks of infectious febrile diseases rather than a primary disease of itself. The fact that many horses can be relieved of roaring by an operation has also some significance. For example, supposing two stallions of equal merit are affected with roaring. One of them is operated on and relieved of roaring and is classed as sound for breeding purposes. The other one is not operated on and continues roaring and is classed as having a hereditary disease and disqualified for breeding purposes. In so far as the hereditary phase is concerned, both horses are still alike, the only difference being that in one case the sound was removed through the relief afforded by an operation, while in the

other case the sound remained because relief through an operation is withheld. To carry the point still further, reverse the process; that is to say, afford relief by an operation to the other one and withold the operation to give relief in the other case. The result would be that the operation in either case removed the abnormal sound in the breathing, but the hereditary phase in its relationship to each remains unchanged. The logical deduction is that the hereditary phase if acknowledged must still prevail in both cases to an equal degree. In view of these considerations many good authorities now question the justification for considering roaring as an essentially hereditary disease, particularly in draft stallions of good type and conformation.

It must be clearly understood, however, that roaring is an unsoundness, and that it is only the hereditary phase which is not universally accepted and is still an open question.

CERTIFICATES AND PREMIUMS FOR STALLIONS.

Important Notice to Stallion Owners—Read Carefully.

There will be three regular forms of certificates for enrolled horses in 1920. The highest class certificate will be called "Approved, Form A1." The second class will be called "Passed, Form 1." the third class will be called "Defective, Form 2."

Every enrolled horse in the Province will be given one of the above mentioned certificates depending on the recommendation of the Stallion Inspectors.

In addition to these three regular forms of certificates the Stallion Inspectors, at the regular fall inspection, may recommend any stallion of outstanding merit for a special form of certificate known as "Premium Certificate."

These "Premium Certificates" will be issued to only those horses recommended for such at the regular fall inspection and upon such recommendation being upheld by a Premium Board of Inspectors. This inspection will be arranged at a later date. All Premium Certificates are valid for the year of issue only.

These premium horses having stood or travelled in the Province of Ontario for the season for which the premium is issued shall be entitled to a cash premium varying from $25 to $100 according to rules and regulations as made by the Ontario Stallion Enrolment Board.

NOTES REGARDING INSPECTION, FALL 1919.

(1) Horses requiring inspection before enrolment will be issued for the season 1920.

(*a*) All horses marked "*" in the report of stallions enrolled for the season 1919.

(*b*) All newly imported stallions.

(*c*) Horses that have never been enrolled in the Province of Ontario.

(2) Owners of pure-bred horses which do not require inspection in order to be enrolled for the season 1920, may present their horses to the inspectors at the regular fall inspection in order that such horses may be recommended for a

higher form of certificate than the form issued for 1919. The inspection of such horses will be made free of charge.

(3) No grade horse can be enrolled or used for public service in the Province of Ontario.

(4) An alphabetical list of Counties is given, which shows the district in which each County is situated, and by referring to that district each stallion owner may ascertain the point of inspection most convenient for himself.

(5) Stallion owners should present horses at the hour stated, as the Inspectors have only a limited time to stay at each inspection point. *The time mentioned in this report is in all cases railway time.*

(6) If a stallion owner is in doubt regarding whether his horse requires inspection or not, he should present the horse in any case, as such inspection if not necessary, would be free.

(7) FEES FOR REGULAR FALL INSPECTION: As enrolment certificates expire December 31st, fees for season 1920, should be sent promptly during the month of January to the Secretary's office.

(*a*) Horses which have never been previously inspected or enrolled in the Province of Ontario, fee $5 and Canadian Registration Certificate issued by the Canadian National Live Stock Records, showing the applicant as recorded owner, should be mailed to the Secretary's office before January 31st, 1920, when Enrolment Certificate will be issued.

(*b*) Horses which have been enrolled for season 1919 but requiring inspection for enrolment in 1920, fee, inspection $3.00, renewal of enrolment $1.00, total $4.00.

(*c*) Horses not requiring inspection for enrolment in 1920, fee, $1.00.

(*d*) In case there has been a transfer of ownership of horses included in "b" and "c" an additional fee of 50c. and the Canadian Registration Certificate showing the present owner properly recorded, should accompany regular fees.

(8) All communications should be addressed, Secretary, Ontario Stallion Enrolment Board, Parliament Buildings, Toronto, Ontario.

ROUTE OF STALLION INSPECTORS IN DISTRICT NO. 1.

Consisting of the Counties of Essex, Kent, Elgin, Lambton, Middlesex, and part of the Counties of Oxford and Huron.

Place.		Time Inspection Commences.		Date.
Harrington		9.00 a.m.	Tuesday,	Oct. 21st
Devizes		2.00 p.m.	"	" 21st
Kirkton		4.00 p.m.	"	" 21st
Dashwood	Zimmer's Hotel	10.00 a.m.	Wednesday,	" 22nd
Zurich	Raus House	2.00 p.m.	"	" 22nd
Parkhill	Arlington Hotel	8.30 a.m.	Thursday,	" 23rd
Forest	Franklin House	11.30 a.m.	"	" 23rd
Sarnia		4.00 p.m.	"	" 23rd
Wilkesport		9.00 a.m.	Friday,	" 24th
Oil City		4.00 p.m.	"	" 24th
Brigden	Spooner's Hotel	5.45 p.m.	"	" 24th
Petrolia	Fletcher House	10.00 a.m.	Saturday,	" 25th
Watford	Roger's Hotel	3.30 p.m.	"	" 25th
Kerrwood		5.30 p.m.	"	" 25th
Alvinston	Revere House	8.00 a.m.	Monday,	" 27th
Appin		10.00 a.m.	"	" 27th
Thamesville		2.30 p.m.	"	" 27th

ROUTE OF STALLION INSPECTORS IN DISTRICT NO. 1.—*Continued.*

Place.		Time Inspection Commences.		Date.
Dresden	Westcott House	4.30 p.m.	“	“ 27th
Wheatley		1.00 p.m.	Tuesday,	“ 28th
Merlin		6.15 p.m.	“	“ 28th
Kingsville		9.00 a.m.	Wednesday,	“ 29th
St. Clair		1.30 p.m.	“	“ 29th
Chatham	Garner House	8.00 a.m.	Thursday,	“ 30th
Ridgetown	Arlington Hotel	11.00 a.m.	“	“ 30th
Palmyra		2.00 p.m.	“	“ 30th
West Lorne		8.45 a.m.	Friday,	“ 31st
Wallacetown		10.00 a.m.	“	“ 31st
Iona		12.30 p.m.	“	“ 31st
Fingal		3.00 p.m.	“	“ 31st
Belmont		8.30 a.m.	Saturday,	Nov. 1st
London	Queen's Hotel	11.30 a.m.	“	“ 1st
Thamesford		2.30 p.m.	“	“ 1st

ROUTE OF STALLION INSPECTORS IN DISTRICT NO. 2.

Consisting of the Counties of Bruce, Wellington, Waterloo, Perth, and part of the Counties of Dufferin, Huron and Grey.

Place.		Time Inspection Commences.		Date.
Rockwood		11.00 a.m.	Tuesday,	Oct. 21st
New Hamburg	Imperial	4.00 p.m.	“	“ 21st
St. Jacobs		6.30 p.m.	“	“ 21st
Mitchell	Hick's House	11.00 a.m.	Wednesday,	“ 22nd
Monkton		2.00 p.m.	“	“ 22nd
Dublin		9.00 a.m.	Thursday,	“ 23rd
Seaforth	Kling House	1.00 p.m.	“	“ 23rd
Clinton	Rattenbury House	9.00 a.m.	Friday,	“ 24th
Goderich	Colborne House	12.30 p.m.	“	“ 24th
Blyth	Mason's Hotel	3.00 p.m.	“	“ 24th
Wingham		9.00 a.m.	Saturday,	“ 25th
Teeswater		1.45 p.m.	“	“ 25th
Gorrie		4.00 p.m.	“	“ 25th
Kincardine		1.30 p.m.	Monday,	“ 27th
Gowanstown		5.00 p.m.	“	“ 27th
Clifford		8.00 a.m.	Tuesday,	“ 28th
Mount Forest	Collin's Hotel	1.00 p.m.	“	“ 28th
Grand Valley		5.30 p.m.	“	“ 28th
Glen Cross		1.00 p.m.	Wednesday,	“ 29th
Shelburne	Mowat's Livery	9.00 a.m.	Thursday,	“ 30th
Proton		1.00 p.m.	“	“ 30th
Hopeville		3.00 p.m.	“	“ 30th
Markdale	Markdale House	9.00 a.m.	Friday,	“ 31st
Owen Sound	Queen's Hotel	2.00 p.m.	“	“ 31st
Annan		3.00 p.m.	“	“ 31st
Presque Isle		4.30 p.m.	“	“ 31st
Allenford		10.00 a.m.	Saturday,	Nov. 1st

ROUTE OF STALLION INSPECTORS IN DISTRICT NO. 3.

Consisting of the Counties of Norfolk, Brant, Haldimand, Welland, Lincoln, Wentworth, Halton, Peel, Simcoe, and part of the Counties of Oxford, York, Dufferin and Grey.

Place.		Time Inspection Commences.		Date.
Weston	Eagle House	10.00 a.m.	Tuesday,	Oct. 21st
Norval		2.30 p.m.	“	“ 21st
Brampton	Victoria Hotel	4.30 p.m.	“	“ 21st
Campbellville		9.00 a.m.	Wednesday,	“ 22nd
Dundas		3.20 p.m.	“	“ 22nd
Harrisburg		4.15 p.m.	“	“ 22nd
Brantford	Smith's Hotel	9.00 a.m.	Thursday,	“ 23rd
Scotland		11.00 a.m.	“	“ 23rd
Waterford		4.00 p.m.	“	“ 23rd
Hagersville	Evans' Feed Barn	5.00 p.m.	“	“ 23rd
Dunnville	Hall's Feed Barn	11.30 a.m.	Friday,	“ 24th
Lowbanks		4.00 p.m.	“	“ 24th
Simcoe	Dr. Burt's Stables	9.00 a.m.	Saturday,	“ 25th
Tillsonburg		1.00 p.m.	“	“ 25th
Innerkip		6.00 p.m.	“	“ 25th
Inglewood		10.00 a.m.	Monday,	“ 27th
Mono Road		4.00 p.m.	“	“ 27th
Everett		9.00 a.m.	Tuesday,	“ 28th
Duntroon		1.00 p.m.	“	“ 28th
Feversham		4.00 p.m.	“	“ 28th
New Lowell		9.30 a.m.	Wednesday,	“ 29th
Minesing		4.00 p.m.	“	“ 29th
Elmvale	Queen's Hotel	10.00 a.m.	Thursday,	“ 30th
Midland		2.00 p.m.	“	“ 30th
Vasey		3.30 p.m.	“	“ 30th
Coldwater	Temperance Hotel	5.00 p.m.	“	“ 30th
Orillia	Orillia House	9.00 a.m.	Friday,	“ 31st
Thornton		4.00 p.m.	“	“ 31st
Bradford	Queen's Hotel	10.30 a.m.	Saturday,	Nov. 1st

ROUTE OF STALLION INSPECTORS IN DISTRICT NO. 4.

Consisting of the Counties of Ontario, Durham, Northumberland, Victoria, Peterboro, Haliburton, and part of the County of York.

Place.		Time Inspection Commences.		Date.
Toronto		10.00 a.m.	Tuesday,	Oct. 21st
Scarboro		2.30 p.m.	“	“ 21st
Agincourt		4.00 p.m.	“	“ 21st
Markham	Andrew's Hotel	9.00 a.m.	Wednesday,	“ 22nd
Stouffville		4.45 p.m.	“	“ 22nd
Richmond Hill		10.30 a.m.	Thursday,	“ 23rd
Queensville		1.00 p.m.	“	“ 23rd
Keswick		4.00 p.m.	“	“ 23rd
Beaverton		1.00 p.m.	Friday,	“ 24th
Kirkfield	Kirkfield House	9.00 a.m.	Saturday,	“ 25th
Victoria Road		10.30 a.m.	“	“ 25th
Norland		3.00 p.m.	“	“ 25th
Blackwater		10.00 a.m.	Monday,	“ 27th
Little Britain		1.00 p.m.	“	“ 27th
Cambray		9.30 a.m.	Tuesday,	“ 28th
Minden		2.00 p.m.	“	“ 28th
Fenelon Falls	McArthur House	5.30 p.m.	“	“ 28th
Lakefield		1.30 p.m—	Wednesday,	“ 29th
Peterboro	Munro Hotel	5.30 p.m.	“	“ 29th
Keene		10.00 a.m.	Thursday,	“ 30th
Campbellford	Kerr's Hotel	4.00 p.m.	“	“ 30th
Millbrook	Queen's Hotel	9.00 a.m.	Friday,	“ 31st
Bethany		11.00 a.m.	“	“ 31st
Campbellcroft		1.30 p.m.	“	“ 31st

ROUTE OF STALLION INSPECTORS IN DISTRICT NO. 4.—*Continued.*

Place.		Time Inspection Commences.		Date.
Nestleton		11.30 a.m.	Saturday,	Nov. 1st
Fenella		3.00 p.m.	"	" 1st
Pickering	Gordon House	9.00 a.m.	Monday,	" 3rd
Cherrywood		10.00 a.m.	"	" 3rd
Claremont		11.30 a.m.	"	" 3rd
Myrtle	Bernie House	3.00 p.m.	"	" 3rd
Port Perry		4.30 p.m.	"	" 3rd

ROUTE OF STALLION INSPECTORS IN DISTRICT NO. 5.

Consisting of the Counties of Hastings, Prince Edward, Frontenac, Leeds, Grenville, Dundas, Stormont, Glengarry, Prescott, Russell, Carleton, Renfrew and Lanark.

Place.		Time Inspection Commences.		Date.
Trenton		11.30 a.m.	Tuesday,	Oct. 21st
Ameliasburg		2.00 p.m.	"	" 21st
Belleville	Hotel Quinte	9.00 a.m.	Wednesday,	" 22nd
Shannonville		1.00 p.m.	"	" 22nd
Wolfe Island		9.30 a.m.	Thursday,	" 23rd
Harrowsmith		3.00 p.m.	"	" 23rd
Kingston	Grimason Hotel	5.45 p.m.	"	" 23rd
Brockville		9.00 a.m.	Friday,	" 24th
Toledo		5.00 p.m.	"	" 24th
Smith's Falls		9.00 a.m.	Saturday,	" 25th
Spencerville		4.30 p.m.	"	" 25th
Kemptville		5.30 p.m.	"	" 25th
Corkery		10.30 a.m.	Monday,	" 27th
Kinburn		4.00 p.m.	"	" 27th
Arnprior		9.00 a.m.	Tuesday,	" 28th
Renfrew	Ottawa House	1.00 p.m.	"	" 28th
Ottawa		8.30 a.m.	Wednesday,	" 29th
Vernon		11.30 a.m.	"	" 29th
Carsonby		3.00 p.m.	"	" 29th
Vars		10.00 a.m.	Thursday,	" 30th
McCrimmon		5.30 p.m.	"	" 30th
Dalhousie		6.00 p.m.	"	" 30th
Martintown		10.00 a.m.	Friday,	" 31st
Williamstown		3.00 p.m.	"	" 31st
Cornwall		8.00 a.m.	Saturday,	Nov. 1st
Wales		8.30 a.m.	"	" 1st
Russell		1.00 p.m.	"	" 1st
Chesterville		7.30 p.m.	"	" 1st

THE CLYDESDALE.

By J. W. Wheaton, Secretary Clydesdale Horse Association of Canada.

Nearly a century ago, a horseman of repute in the old land described the Clydesdale in these words: "The most valuable breed of draft horses in Britain, not only for farming, business, but for every description of work, where strength, agility and docility of temper are required."

That description of one hundred years ago fits in well with the requirements of the heavy draft horse in these modern times. A draft horse must have strength, it must have good action, it must be docile of temper and it must be sound. Measured by these four requisites, how does the Clydesdale of to-day qualify as a draft horse?

STRENGTH.—The well bred Clydesdale has size and weight, a weight made up of good working material, neither blubber nor beef, but power-producing, load-pulling muscle and bone, enough of it to afford efficiency in strength, momentum, stamina and power. Every pound of weight in the Clydesdale is of the right stuff and can be utilized to the full in steady pulling power, and this is what counts in day in and day out hauling a heavy load on city street or country road or in the field before a plow.

ACTION.—We are not over stating matters when we say that the Clydesdale excels all other draft breeds in quickness of action and correct movement. And it comes by these good qualities naturally. Ever since the Clydesdale has been known as a distinct breed, breeders have laid special stress upon quality of under pinning. And it is because of the emphasis placed upon feet and legs during all these years that the Clydesdale of to-day stands out above all other draft breeds in point of action and correct movement. The feet must be large, round at the hoof heads and open with a good heel; the pastern long and sloping; the canons short flat and hard, and the quarters well muscled. These qualities the modern Clydesdale has to a marked degree, and which make it excel in quick action and strong pulling power. The manner in which the legs of a Clydesdale are set under him has much to do with his superior pulling and staying powers as a draft horse. The shoulder is noted for its obliqueness and high withers, which gives the Clydesdale its superior stride. The legs are carried squarely under him and follow each other in a straight line with the points of the hocks inclined inward and not outward. An English authority has put it as follows: "A Clydesdale must stand with his hind legs in regulation military fashion—heels in and toes out." It is these qualities in the Clydesdale that produce the correct mechanical progression, which is a very desirable feature of the useful draft horse.

SOUNDNESS.—The Clydesdale is superior to any of the other draft breeds in soundness. Breeders of Clydesdales during the past century and a half who have constantly sought for the proper set of feet and legs and quality of bone knew well what they were about. It is this superior quality in the under pinning that gives the Clydesdale its prominence in soundness and good wearing character. qualities that are of great value in the heavy draft horse.

TEMPERAMENT.—The "docility" of the Clydesdale of the last century is true of the Clydesdale of to-day The Clydesdale though docile is not of a sluggish nature. When properly trained, it responds to the word of command quickly and with a spirit that gives pleasure to the driver. This is a valuable quality in a draft horse. No time is lost in getting away with a load. The ready respond to word of command or movement of the reins adds greatly to its value for transport work on city streets.

In this necessarily brief description one cannot go fully into all the factors that have entered into the development of the Clydesdale as we have it to-day. By unswerving adherence to an ideal, a type has been produced that has undergone no change for almost two centuries, except in improvement of its quality and an increase in beauty of conformation. This is of the utmost importance in producing the draft horse. The type is fixed and as the real test of the superiority of any breed rests with the ability of that particular breed to beget geldings of high class when mated with suitable mares the Clydesdale stands clearly at the top for this purpose. Clydesdale geldings of size and quality make the best draft horses in the world. They have action, soundness and stamina possessed by no other breed. Users of draft horses both in this country and across the water bear testimony to this fact.

A word to the wise is sufficient. Mindful of the fact that the draft horse of size and quality is the one that commands the top price in the market to-day and will continue to do so for many years to come. Clydesdale breeders must aim to combine weight and size with quality of feet and legs, in their breeding operations. Choice heavy draft horses of quality are very scarce to-day, and they will be scarcer still in the years to come. The farmer to-day who breeds his mares to a good Clydesdale stallion stands to reap a rich reward when the young stock comes to maturity.

THE PERCHERON.

The home of the breed is in the Province of La Perche, France. This is a comparatively small area comprising in all about 3,500 square miles. Only foals which are the progeny of registered dams and sires of the Percheron breed, and foaled within the boundaries of the Province are eligible for registration at the present time in the Percheron Stud Book of France.

The advance of civilization and time has done much in the evolution of the Percheron breed. During the middle ages the home of the Percheron was noted for the production of chargers suitable for use in war. Later on, before the introduction of railways, horses of a somewhat heavier type were produced in the same Province and used on the stage coaches. With the improved methods in Agriculture, horses played an important role in the cultivation of the land; thus a further increase in weight and strength was sought. At the present time with the development of centres of great population, humming with industrial activity and commerce, we find the horse being developed for the hauling of great loads and heavy work of all kinds. Thus it is that the Percheron breed, as we find it to-day, may be said to have four cycles of history. The changes during these cycles have been brought about by the stronger infusion of cold blood into the original cold-hot blood inheritance, thus increasing the size and weight of the individuals of the breed. This infusion of the colder blood of the heavier horses has had a tendency to diminish the activity and refinement of the original but by a process of careful breeding and selection as much activity and refinement has been retained with the increased size and weight as the law of co-relation would permit.

Under modern conditions, horses exist to work, and outside of a small amount of special breeding for racing, saddle purposes, etc. the value of a horse is largely proportionate to his usefulness in the collar. This usefulness of the individual is again dependant upon his size, strength and activity combined with endurance and docility. The demand in cities, lumber camps and on large farms for stronger and heavier horses is ever increasing. With the scarcity of labor on farms we find an ever increasing tendency to the use of four and six horse teams. The recognized docility and endurance of the Percheron as a breed is being appreciated. There is a noticeable absence of fretting and prancing, which makes the handling of a four or six horse team a pleasure. This evenness of temperament and endurance has perhaps been largely responsible for the extensive use of Percheron sires in the Western States of the United States.

THE HACKNEY.

By H. M. Robinson, Secretary, Canadian Hackney Horse Society.

So much has been said in favor of this breed during the past two hundred years or more that it is difficult to add much that is new. As the years roll on, the

Hackney still retains his popularity. The principal reason is that he is the real general utility horse. There is very little one can ask him to do that he does not do in such a cheerful manner, that it is always a pleasure to watch him at his work, let it be harnessed to the millionaire's carriage, carrying the millionaire or his ladies, as a park hackney, or jumping the high jump for which he holds the world's record, or in heavy express or light delivery or any of the odd jobs that usually fall to the lot of a third horse on the farm. His great beauty of conformation, action, strength, activity, courage, soundness and good temper has been bred in him for so many centuries that he is bound to transmit these qualities to his offspring if mated with a little care as to blood and general outline.

The average prices that have been realized at auction at some of the dispersion sales have been very satisfactory, and big figures have been obtained recently. This spring the owner of "Park Carnation" refused (in Scotland) $25,000 for this mare, and another breeder refused to put a price on his young stallions to the Japanese Government.

Breeders are taking much more interest in the registration of their fillies. The Hackney Top cross has proved a marked success on almost any light mare by rounding out their conformation and making a marketable animal. The Canadian Hackney Horse Society has been giving gold and silver medals at the large shows, as well as money grants, thus encouraging the breeders to show their animals.

BREEDING OF FAMOUS CLYDESDALE SIRES.

It is rather too much to expect that judges of live stock should be infallible, but while mistakes may be made in judging in one particular case, yet, when we sum up the work of the various horse judges for the last twenty years, the awards as given by them should approximate the truth, and the placings given by such men for such a term of years should give us an idea as to the excellence of any particular family which has been uniformly successful in the show ring.

A list of the great sires in Scotland (proved by the winnings of their get at the great horse shows of that country) is given in Table I. If we went no further than simply to take the names of these horses, one or two points would be impressed on our minds, first the absolute predominance of Baron's Pride as a sire, and secondly, the wonderful breeding power of such horses as Hiawatha, Royal Favorite, Baron o'Buchlyvie, Everlasting, Revelanta, etc.; and finally, when we study the ancestry of these prominent sires, we find that they are descended from one common stock and are in most cases very closely related.

Table II. shows the breeding of the animals listed in Table I. and we find that this list my be divided into three classes—sons of Darnley, sons of Baron's Pride, and sons of Prince of Wales. Now let us look at the table and see the relationship of these three great horses.

Darnley and Prince of Wales are descended through their dams from Sampson, who traces an unbroken line back to the famous stock of Glancer 2nd. Darnley, on his sire's side, is also descended from Glancer, and while Prince of Wales, on his sire's side, does not possess so fashionable a pedigree, his grand-parents were very excellent individuals, both being champions in their time. From the table we see Baron's Pride is a descendant of both of these great horses, Darnley and Prince of Wales.

Table III. shows us the breeding of these same horses (Table I.) on their dam's side. A close study of Tables II. and III. will show that with very few exception. the breeding on the dam's side runs into the same identical blood as that shown in Table II., which gives the breeding on the sire's side. The list which has been compiled gives us, as it were, the aristocrats of the Clydesdale world, but it must not be thought that there are no other famous animals whose names in a pedigree would not give it value from a breeding standpoint. However, such names as are given in these three tables when found in a pedigree should entitle the owner to consider that as far as ancestry is concerned his horse is well bred, and it is for him to judge whether the individual possesses excellence enough in himself, when backed by such ancestry, as to be a desirable animal to place in the stud.

It is a general impression that show animals are usually only ordinary as breeders. The photographs which are given of famous sires with their show yard records would tend to disprove this idea.

In addition to Table I., the following standings of horses mentioned in Table II., as producers of prize winners in Scottish shows are important.

The most successful sires previous to 1880 were Lochfergus Champion, Prince of Wales, Darnley 222, Steele's Prince Charlie 628, Old Times 579, Lord Lyon 489.

Between 1880 and 1890, Prince of Wales, Darnley, Lord Lyon, MacGregor, Sir Everard, Baron's Pride were among the most noted sires.

Prince Alexander (8899) foaled in 1889 stood second in Scotland as a sire in 1899.

MacGregor (1487) foaled 1878 had proven himself during the nineties a wonderful sire of mares and standing 5th as a sire in 1899 and 8th in 1900.

Lord Stewart 10084, foaled 1893, as a sire stood 6th in 1899 and 7th in 1900.

Royal Gartly 9844, foaled 1892, as a sire stood 7th in 1899 and 5th in 1900.

Handsome Prince 10356, foaled 1888, as a sire stood 6th in 1900.

Prince of Brunstane 9977, foaled 1892, as a sire stood 9th in 1900, 11th in 1903 and 32nd in 1908.

Lord Lothian 5998, foaled 1884, as a sire stood 10th in 1900, 15th in 1906, and 28th in 1908.

Royal Carrick 10270, foaled 1895, as a sire stood 11th in 1900.

Prince Robert 7135, foaled 1887, as a sire stood 12th in 1900.

Lord Fauntelroy 10370, foaled 1896, as a sire stood 9th in 1903.

Clan Chattan 10527, foaled 1896, as a sire stood 10th in 1903.

Acme 10485, foaled 1897, as a sire stood 12th in 1903 and 8th in 1907.

Balmedie Queen's Guard 10966, foaled 1898, as a sire stood 5th in 1904.

Count Victor 12108, foaled 1902, as a sire stood 12th in 1909.

Ruby Pride 12344, foaled 1902, as a sire stood 20th in 1909 and 12th in 1910.

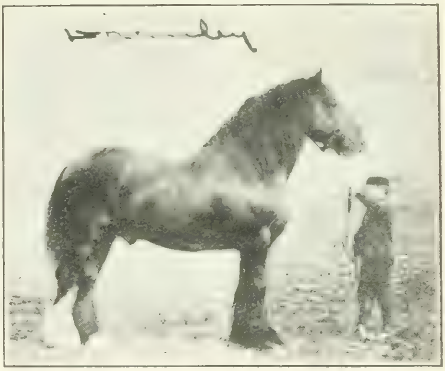
Baron of Burgie 13345, foaled 1905, as a sire stood 11th in 1911 and 16th in 1916.

High Degree 14703, foaled 1907, as a sire stood 12th in 1914 and 24th in 1915.

Rising Tide 17454, as a sire stood mentioned in 1916, 13th in 1917 and 17th in 1918.

Scotland's Victor 18108, foaled 1911, as a sire stood 15th in 1917 and mentioned in 1918.

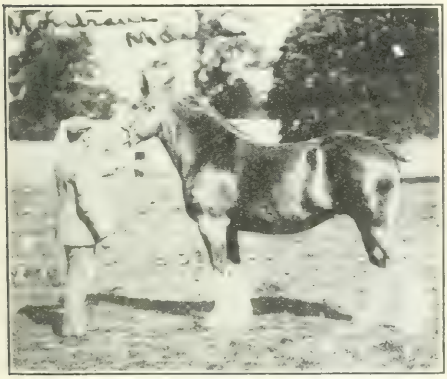
Lochfergus Champion (449); Grandsire of Darnley, 1861.



Darnley (222), 1872-1886.

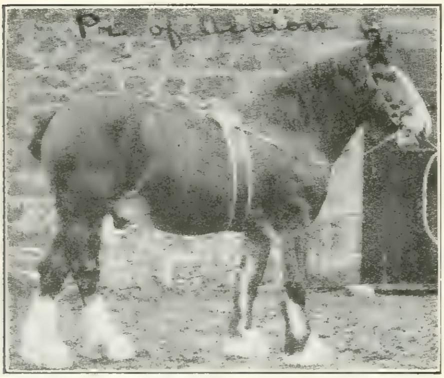
Montrave Mac (9958); Sire, Macgregor; Dam, Montrave Maud.

Macgregor (1487), 1878; Sire, Darnley.

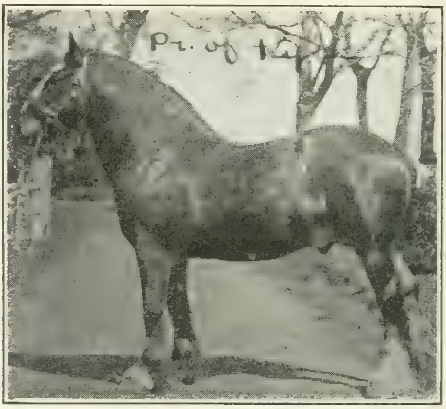


Montrave Maud (11786); Sire, Prince of Wales; Dam, Moss Rose.

Prince of Wales (673), 1866-1888.

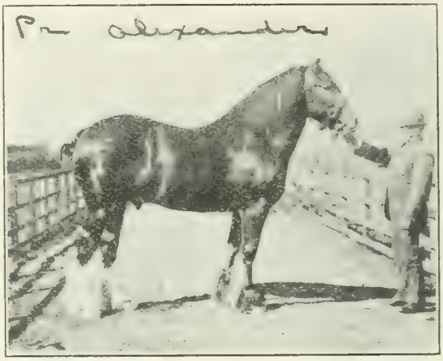


Prince of Albion (6178), 1886; Sire, Prince of Wales; Dam by Darnley.

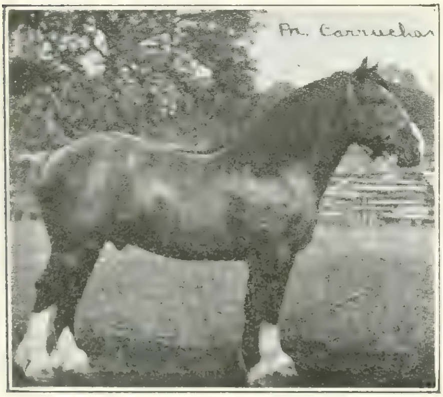


Prince of Kyle (7155), 1887; Sire, Prince of Wales; Full brother of Prince of Albion.

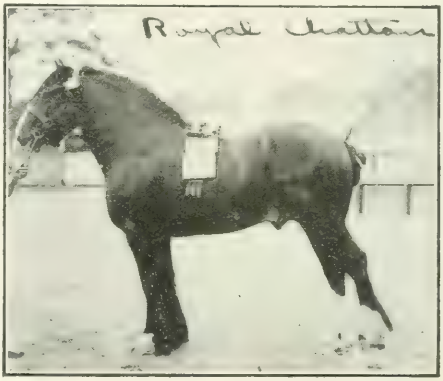
Prince of Erskine (9647); Sire, Prince of Albion.



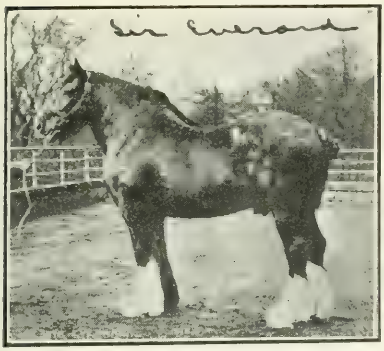
Prince Alexander (8899); Sire, Prince of Wales.



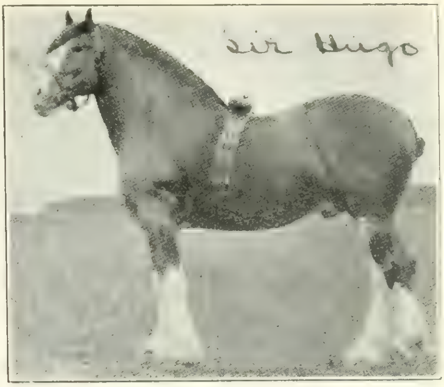
Prince of Carruchan (8151); Sire, Prince of Wales.



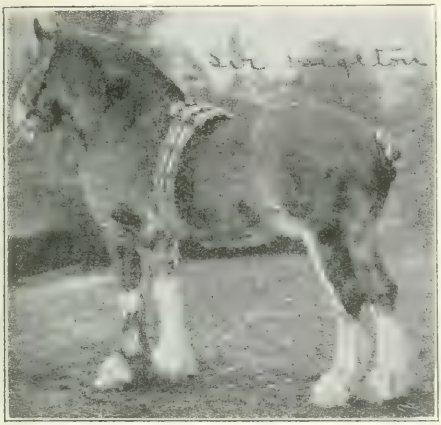
Royal Chattan (11489); Sire, Clan Chattan.



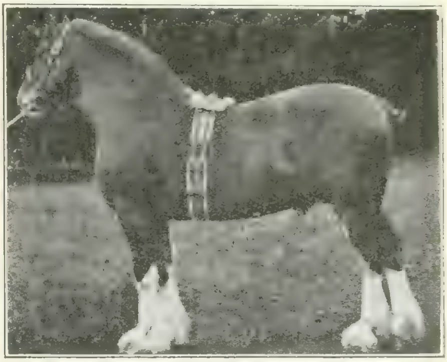
Sir Everard (5353); Sire, Topgallant.



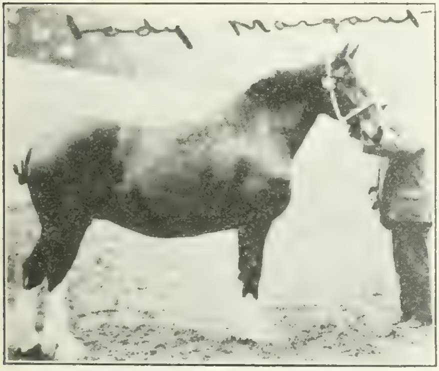
Sir Hugo (10924); Sire, Sir Everard; Weight, 1,950; Height, 17 hands 1 in.



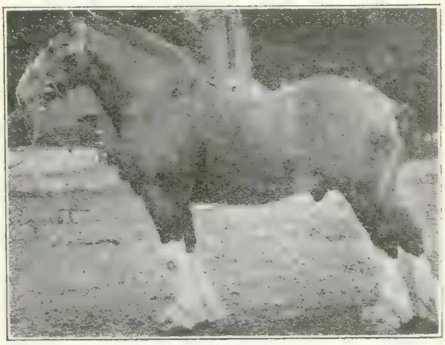
Sir Dighton (13760); Sire Sir Everard.



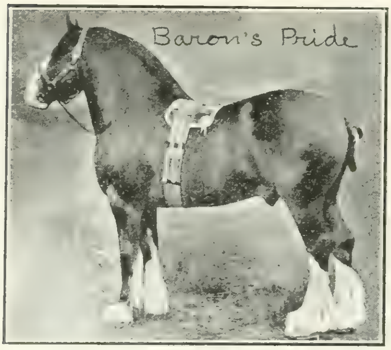
Allendale (12418), 1903; Sire, Sir Everard.



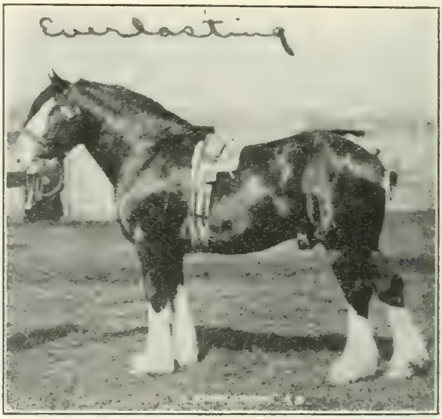
Lady Margaret (13833), 1896; Sire, Sir Everard; Dam by St. Lawrence.



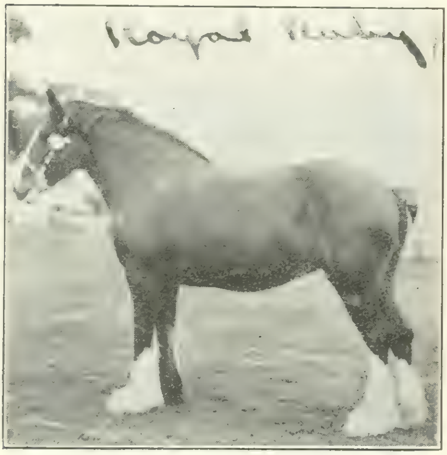
Signet (16816); Sire, Allendale.



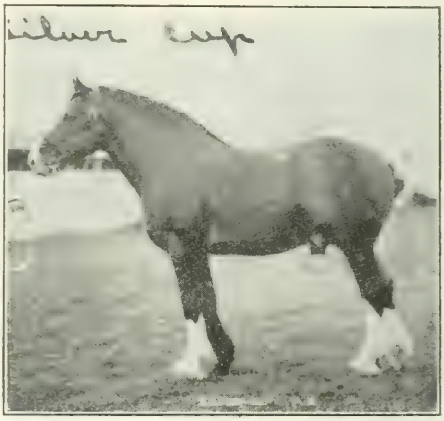
Baron's Pride (9122); Sire, Sir Everard.



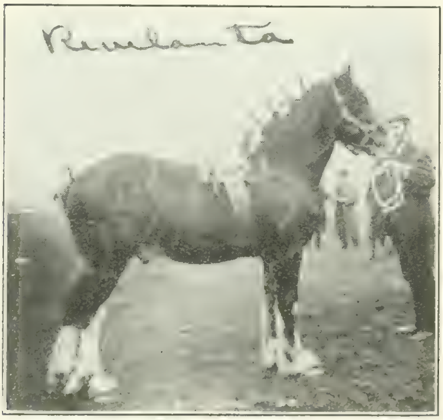
Everlasting (11331); Sire, Baron's Pride.



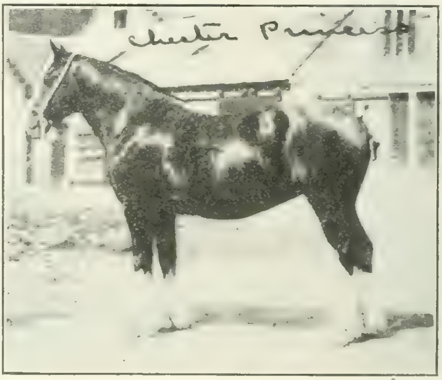
Royal Ruby (21619); Sire, Baron's Pride; Dam by Macgregor.



Silver Cup (11184); Sire, Baron's Pride.



Revelanta (11876); Sire, Baron's Pride.



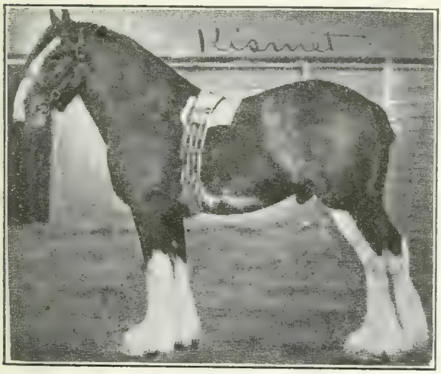
Chester Princess; Sire Baron's Pride; Dam by Prince of Fashion.

Baron O'Buchlyvie (11263); Sire, Baron's Pride; Weight, 1,876; Height, 17 hds.

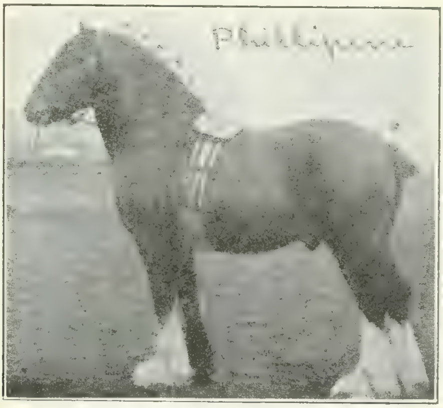
Dunure Chosen; Sire, Baron O'Buchlyvie. Full sister of Dunure Footprint.

Dunure Footprint (15203); Sire, Baron O'Buchlyvie.

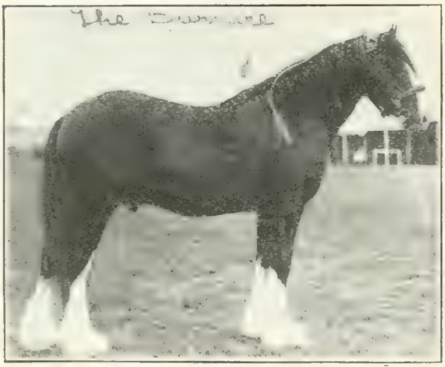
Bonnie Buchlyvie (14032); Sire, Baron O'Buchlyvie.



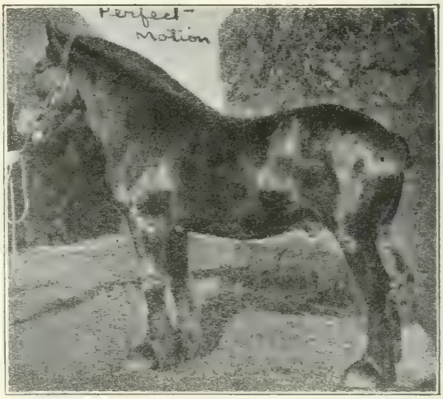
Kismet (18417); Sire, Dunure Footprint.



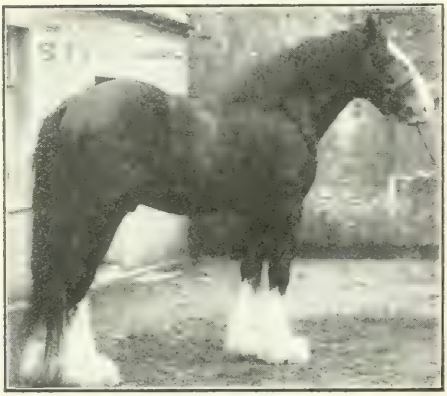
Phillipine (18044); Sire, Bonnie Buchlyvie.



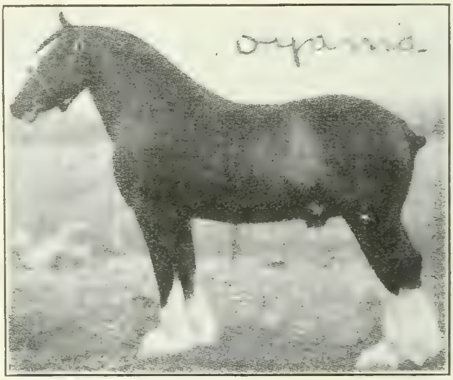
The Dunure (16839); Sire, Baron O'Buchlyvie.



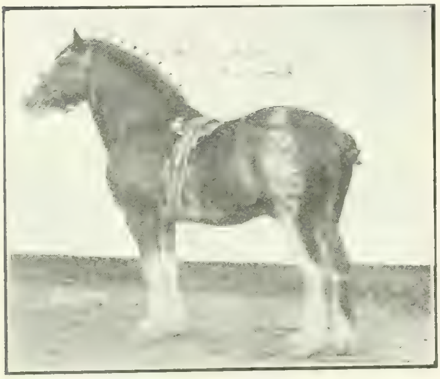
Perfect Motion (13123); Sire, Baron O'Buchlyvie.



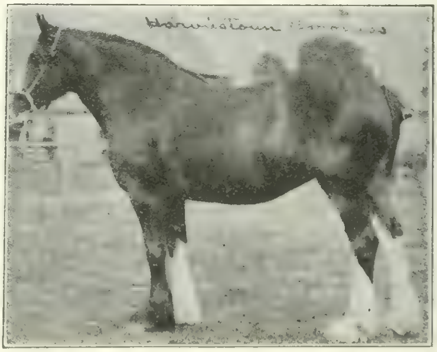
Dunure Stephen (17875); Sire, Baron O'Buchlyvie.



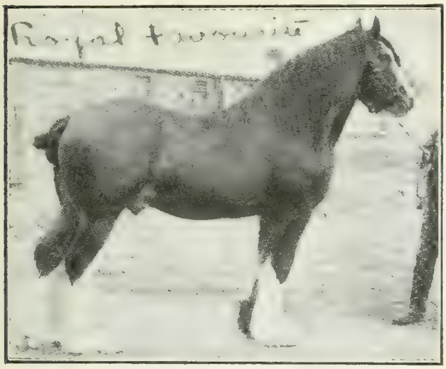
Oyama (13118); Sire, Baronson.



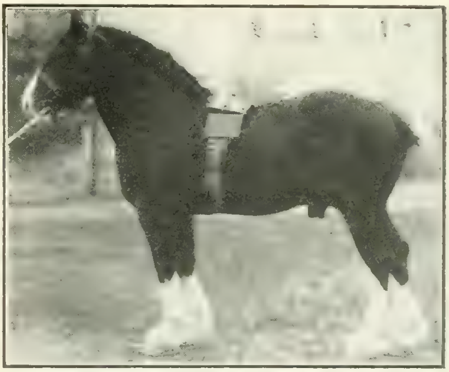
Fairholme Footprint (17584); Sire, Dunure Footprint; Dam, Harviestoun Baroness.



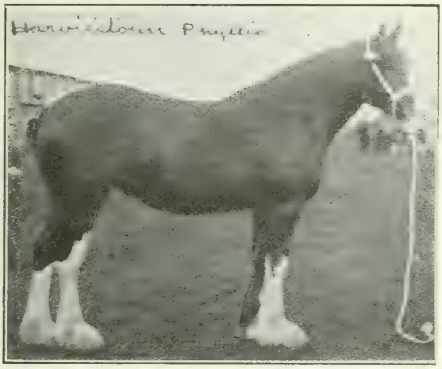
Harviestoun Baroness; Sire, Baron's Pride.



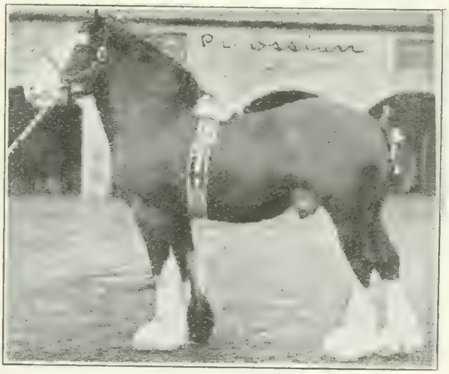
Royal Favourite (10630); Sire, Royal Gartly; Weight, 1,960; Height, 16 hds. 2½ in.



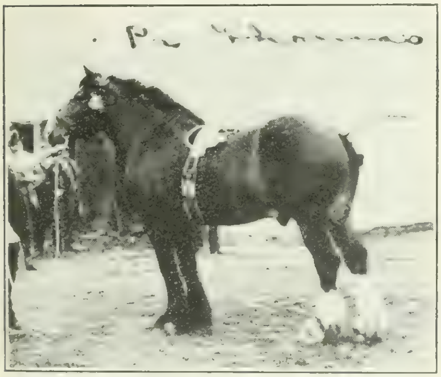
Scotland Yet (14839); Sire, Royal Favourite.



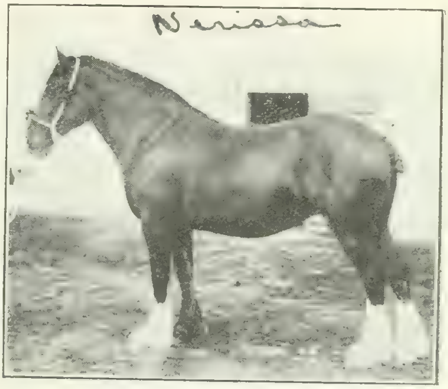
Harviestoun Phyllis; Sire, Royal Favourite; Dam, Chester Princess.



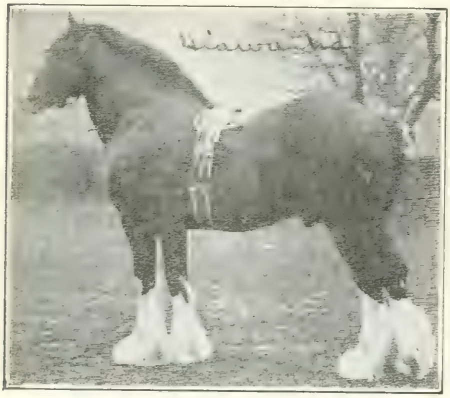
Prince Ossian (16004); Sire, Royal Favourite.



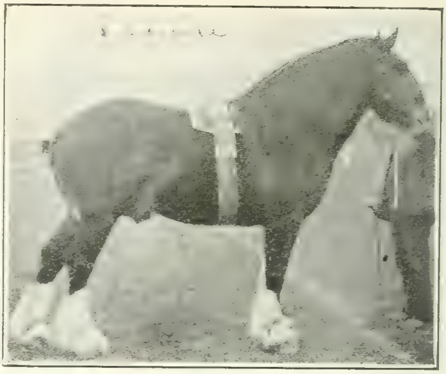
Prince Thomas (10262); Sire, Sir Thomas.



Nerissa, 1906; Sire, Baron's Pride; Dam by Royal Favourite.

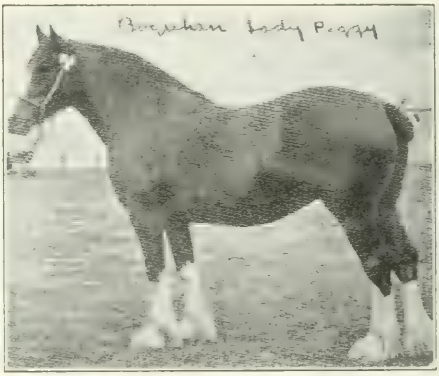


Hiawatha (10067); Sire, Prince Robert.



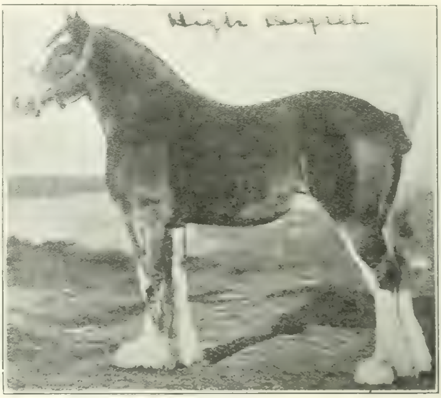
Labori (10791); Sire, Hiawatha.

Apukwa (14567); Sire, Hiawatha.



Boquhan Lady Peggy; Sire, Hiawatha.

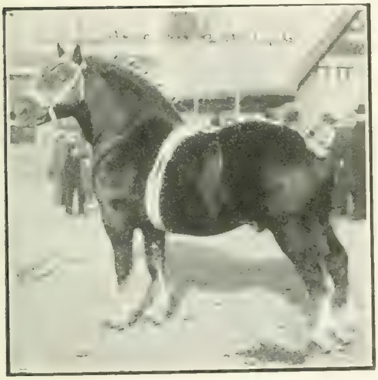
Nannie; Sire, Apukwa.



High Degree (14703); Sire, Count Victor by Hiawatha.

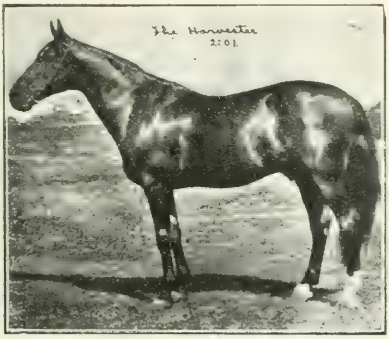
Percheron Stallion, "Lagos."

Shire Stallion, "Weydeland's President."



Belgian Stallion, "Alfred de Bill Eyck."

Hackney Stallion, "Colorito."



Standard-bred Stallion, "The Harvester."

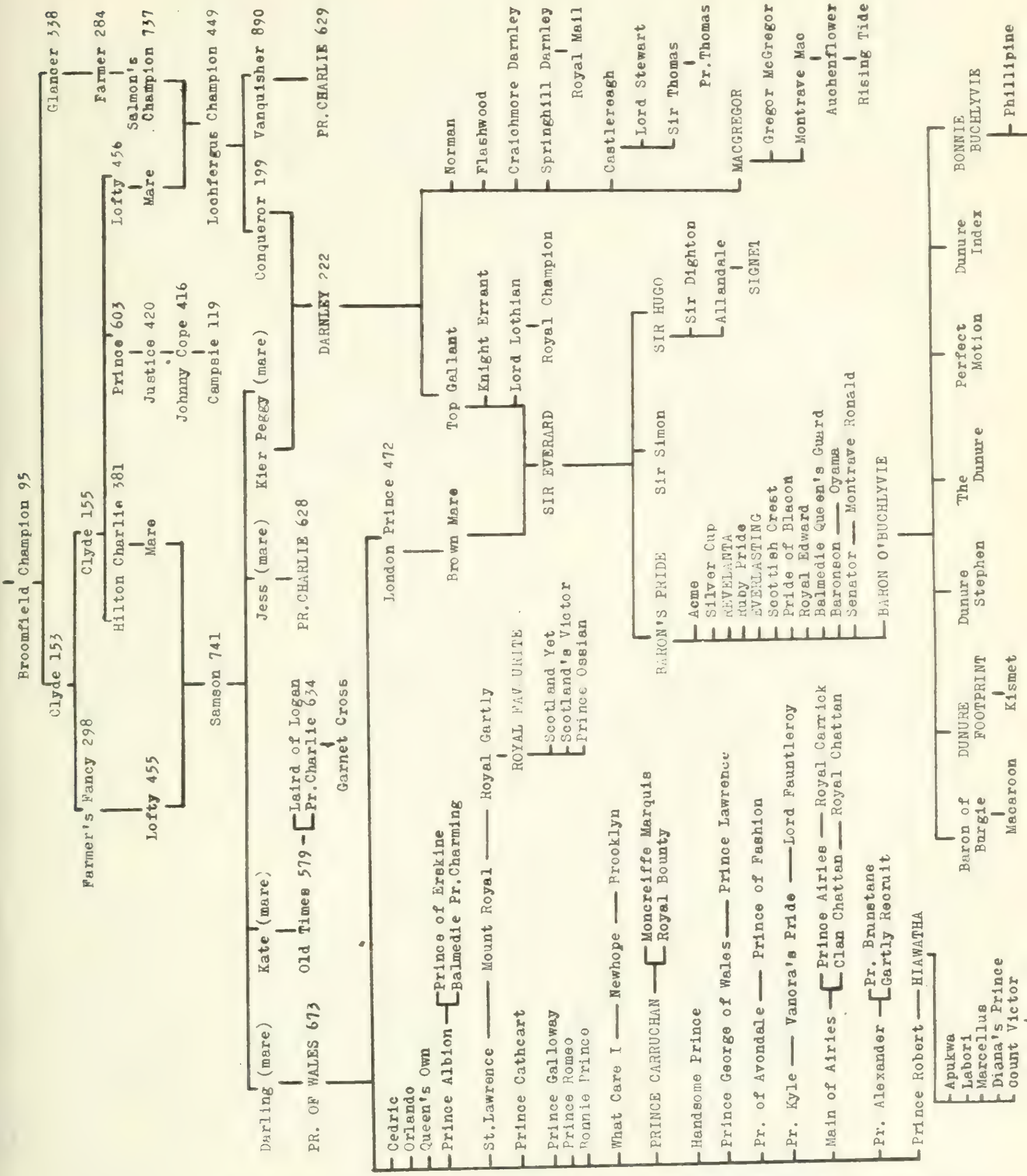
Thoroughbred Stallion, "Hanover."

TABLE I.

CLYDESDALE SIRES.		RANK AS PRODUCERS OF PRIZE-WINNERS AT THE SCOTCH SHOWS.																			
Name and Number.	Date of birth.	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918
Baron's Pride (9122).......	1890	1	1	1	1	1	1	1	1	1	1	1	1	2	3	4	6	5	14	..	..
Sir Everard (5353).........	1885	3	2	2	6	8	x	x	x	x	x	..	x	..	..	..	..	..	..	..	..
Prince of Carruchan (8151).	1888	4	4	3	4	6	x	x	x	x	..	x	..	..	..	..	..	..	..	..	..
Montrave Mac (9958).......	1893	..	3	4	5	4	x	x	x	x	..	x	x	20	31	x	15	13	22	..	..
Hiawatha (10067)	1892	..	..	5	3	3	2	2	2	2	2	2	2	4	4	5	5	7	10	9	10
Prince Thomas (10262).....	1895	..	..	6	7	7	x	x	10	..	..	..	..	..	..	..	..	..	..	..	..
Royal Favorite (10630).....	1897	..	..	..	2	2	3	3	5	5	5	5	7	7	5	11	8	9	9	8	6
Marcellus (11110)	1898	..	..	..	..	5	x	x	6	x	16	10	10	21	..	x	x	x	..	14	20
Pride of Blacon (10837)....	1898	..	..	..	..	x	7	x	x	x	x	x	x	..	x	x	x	15	23	x	13
Labori (10791).............	1898	..	..	..	..	x	9	x	8	..	..	..	..	..	..	..	..	..	..	..	..
Marmion (11429)...........	1899	..	..	..	..	..	10	x	14	x	7	11	14	9	11	12	x	..	..	..	..
Baron o'Buchlyvie (11263)..	1900	..	..	..	..	..	..	4	4	3	4	3	3	1	1	1	1	2	2	4	3
Everlasting (11331)........	1900	..	..	..	..	..	..	5	3	4	6	7	4	3	9	8	10	6	15	12	14
Silver Cup (11184)........	1899	..	..	..	..	..	..	..	7	9	8	17	15	34	23	17	x	..	..	..	..
Revelanta (11876).........	1901	..	..	..	..	..	..	..	9	7	3	4	6	5	7	6	7	8	5	x	16
Sir Hugo (10924)..........	1898	..	..	..	..	..	..	..	12	6	9	8	9	10	26	14	14	23	x	..	..
Royal Edward (11495).....	1900	..	..	..	..	..	..	..	11	x	14	15	8	14	20	x	..	..	25	..	..
Montrave Ronald (11121)..	1898	..	..	..	..	..	..	..	13	x	10	9	13	x	x	x	x	..	..	..	..
Royal Chattan (11489).....	1900	..	..	..	..	..	..	..	..	10	11	13	x	35	35	x	x	..	..	..	..
Auchenflower (12007)......	1902	..	..	..	..	..	..	..	..	..	22	..	..	..	..	9	11	20	6	3	4
Oyama (13118)............	1904	..	..	..	..	..	..	..	..	..	..	6	5	8	8	10	x	18	..	..	..
Scottish Crest (13182).....	1904	..	..	..	..	..	..	..	..	..	..	..	11	12	14	..	x	..	..	..	..
Apukwa (14567)...........	1906	..	..	..	..	..	..	..	..	..	..	..	..	6	2	2	3	3	3	5	5
Bonnie Buchlyvie (14032)..	1906	..	..	..	..	..	..	..	..	..	..	..	..	17	6	12	4	4	4	2	2
Scotland Yet (14839)......	1906	..	..	..	..	..	..	..	..	..	..	..	..	16	10	7	9	12	11	..	..
Diana's Prince (13440).....	1905	..	..	..	..	..	..	..	..	..	..	..	..	18	..	13	x	x	..	..	x
Dunure Footprint (15203)..	1908	..	..	..	..	..	..	..	..	..	..	..	..	..	x	3	2	1	1	1	1
Sir Dighton (13760).......	1905	..	..	..	..	..	..	..	..	..	..	..	..	..	12	16	x	21	..	..	..
The Dunure (16839).......	1910	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16	x	x	7	7
Signet (16816)............	1909	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	10	..	..	21
Perfect Motion (13123).....	1904	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	11	x	..	..
Prince Ossian (16004).....	1909	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	x	16	8	11	11
Dunure Stephen (17875) ...	1911	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	6	12
Lord Dundurn (18428).....	1912	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	x	10	15
Phillipine (18044).........	1912	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8
Kismet (18417)...........	1913	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9

x Sire mentioned for that year but not placed.

TABLE II.



NOTE.—In tracing breeding of High Degree, we find that he is the son of Count Victor, son of Hiawatha, son of Prince Robert, son of Prince of Wales, son of the mare Darling, daughter of Samson, son of Lofty, son of Farmer's Fancy, son of Clyde 153, son of Broomfield Champion, son of Glancer 337.

In tracing breeding of Lord Dundurn, we find that he is the brother of Phillipine and son of Bonnie Buchlyvie, son of Baron O'Buchlyvie, son of Baron's Pride, son of Sir Everard, son of Top Gallant, son of Darnley, son of Conqueror, son of Lochfergus Champion, son of Salmon's Champion, son of Farmer, son of Glancer 338, son of Broomfield Champion, son of Glancer 337.

TABLE III.

BREEDING OF GREAT SIRES (ON DAM'S SIDE).

Name.	Dam.	Sire of Dam.	Dam of Dam.	Sire of Dam of Dam.
Baron's Pride	Forest Queen	Springhill Darnley	Forest Maillie	Pretender.
Sir Everard	Brown Mare	London Prince	Mare	General Williams.
Prince of Carruchan	Duchess of Challoch	Old Times	Mary of C.	Farmer.
Montrave Mac	Montrave Maud	Prince of Wales	Moss Rose	Prince Charlie (631).
Hiawatha	Old Darling	Tom	Puppet	Lord Lyon.
Prince Thomas	Comely	Flashwood	Kate	Paragon.
Royal Favourite	Rosie of Arnprior	Brooklyn	Lily of Nethercarse	True Blue.
Marcellus	Merry Sunshine	Queen's Own	Sunray	Prince of Avondale.
Pride of Blacon	Orphan Princess	Prince of Fashion	Princess	Darnley.
Labori	Carina	Craichmore Darnley	Mabel of G.	Glenlee.
Marmion	Lady Rose	Royal Mail	Mare	Roderick Dhu.
Baron O'Buchlyvie	Young Maybloom	Knight Errant	Maybloom	What Care I.
Everlasting	Rose of Purston Hall	Prince of Galloway	Bet McGregor	Gregor McGregor.
Silver Cup	Balmedie Vesta	Macgregor	Maggie	Lord Lyon.
Revelanta	Marchioness of G.	Prince of Albion	Belle	Emperor.
Sir Hugo	Jess of W.	Lord Reay	Nancy	Jack.
Royal Edward	Hermione	Prince Romeo	Heroine	Darnley.
Montrave Ronald	Montrave Rebecca	Prince of Albion	Montrave Rosebud	Garnet Cross.
Royal Chattan	Springhill Baroness	Baron's Pride	Springhill Flora	Cairnbrogie Stamp.
Auchenflower	Nora	Lord Lothian	Sally of Farhill	Gartsherrie.
Oyama	Scottish Princess	Prince of Cathcart	Bess of B.	Topgallant.
Scottish Crest	Seabreeze	Lord Lothian	Jess of Parkhead	Challenger.
Apukwa	Royal May	Royal Favourite	Jenny of R.	Balmedie Prince Charming.
Bonnie Buchlyvie	Queen of Beauty	Macgregor	Lady Louisa	Prince of Wales.
Scotland Yet	Chester Princess	Baron's Pride	Orphan Princess	Prince of Fashion.
Diana's Prince	Diana's Pride	Baron's Pride	Lady Diana	Prince Romeo.
Dunure Footprint	Queen Ideal	Auchenflower	Royal Darling	Royal Champion.
Sir Dighton	Jean of Moy	Rosedale	Mary of Moy	Bonnie Prince.
The Dunure	Carina II.	Hiawatha	Carina	Craichmore Darnley.
Signet	Nancy Lee	Marcellus	Kathleen	Moncreiffe Marquis.
Perfect Motion	Jean of Haplands	Prince Alexander	Sally	Laird of Logan.
Prince Ossian	Annie Pride	Baron's Pride	Poor Girl	Montrave Mac.
Dunure Stephen	Minniewawa	Hiawatha	White Heather	Baron's Pride.
Lord Dundurn	Annie's Favourite	Royal Favourite	Lady Ann	Baron's Pride.
Phillipine	Denton Lady	Royal Bounty	Sally of Mealo	Gartly Recruit.
Kismet	Moira	Baron's Pride	Thelma	Main of Airies.

TABLE IV.

PRIZE WINNING CLYDESDALES AT THE HIGHLAND SHOW.

Class.	Name.	Sire.
	1884.	
Aged Stallion	*Darnley, 222	
3 yr. “	Oliver Twist	Prince Imperial, 1258.
2 “ “	**McCamon	Blue Ribbon, 1961.
1 “ “	Little Jock Elliott	Macgregor.
Br. Mare	Bonnie Jean	Young Keir, 982.
Yeld “	Rosie	
3 yr. “	Moss Rose	Prince Charlie, 634.
2 “ “	Filly	St. Lawrence, 1885.
	1885.	
Aged Stallion	Gallant Lad, 2781	Druid, 1120.
3 yr. “	Macfarlane, 2988	Macgregor.
2 “ “	Flashwood, 3604	Darnley.
1 “ “	Knight Errant, 4483	Top Gallant.
Yeld Mare	Moss Rose	Prince Charlie, 634.
3 yr. “	Comely	Old Times.
1 “ “	Myrtle	Macgregor.
	1886.	
Aged Stallion	Macfarlane	Macgregor.
3 yr. “	Flashwood	Darnley.
2 “ “	Cairnbrogie Stamp, 4274	Lord Erskine, 1744.
1 “ “	Colt	Darnley.
Yeld Mare	Moss Rose	See above.
2 yr. “	Laura Lee	Darnley.
1 “ “	Pandora	Darnley.
	1887.	
Aged Stallion	Prince Lawrence	Prince George of Wales.
3 yr. “	*Cairnbrogie Stamp	As above.
2 “ “	Granite City, 5397	Lord Erskine, 1744.
1 “ “	Pr. of Albion	Pr. of Wales.
Br. Mare	*Moss Rose	As above.
Yeld “	Lady Macbeth	Macbeth.
2 yr. “	Pandora	Darnley.
1 “ “	Vanora	Darnley.
	1888.	
Aged Stallion	Cairnbrogie Stamp	As above.
3 yr. “	Macaulay	Macgregor.
2 “ “	Pr. of Albion	As above.
1 “ “	Colt	
Br. Mare	Sunray	Pr. of Avondale.
Yeld “	Laura Lee	Darnley.
3 yr. “	Mermaid	Lord Erskine.
2 “ “	Primrose	Darnley.
	1889.	
Aged Stallion	Lord Ailsa, 5974	Lord Erskine.
3 yr. “	*Pr. of Albion	Pr. of Wales.
2 “ “	Eastfield Prince	Lord Erskine.
1 “ “	Orlando	Pr. of Wales.
Yeld Mare	*Rose of Banknock	
3 yr. “	Sunrise	Darnley.
1 “ “	Scottish Snowdrop	Prince of Wales.
	1890.	
Aged Stallion	Prince of Albion	Prince of Wales.
3 yr. “	Darnley's Last	Darnley.
2 “ “	Prince of Carruchan	Pr. of Wales.
1 “ “	*Prince Alexander	Pr. of Wales.
Yeld Mare	*Sunrise	Darnley.
3 yr. “	Montrave Gay Lass	Garnet Cross.
2 “ “	Scottish Snowdrop	Pr. of Wales.
1 “ “	Montrave Maud	Pr. of Wales.

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*Marks Champion.

1891.

Class.	Name.	Sire.
Aged Stallion	Goldfinder	Lord Lyndock.
3 yr. “	*Prince of Carruchan	Pr. of Wales.
2 “ “	Rosemount	Prince of Albion.
Br. Mare	*Sunrise	Darnley.
In Foal	Polly	King of Forest.
3 yr. Mare	Scottish Snowdrop	Pr. of Wales.
1 “ “	Balmedie Enchantress	Royalist.

1892.

Aged Stallion	*Rosedale	Son of Macgregor.
2 yr. “	Belvidere	Knight of Lothian.
1 “ “	Colt	Goldfinder.
Br. Mare	Lady Dorothy	Darnley.
Yeld “	Scottish Snowdrop	Pr. of Wales.
3 yr. “	*Irene	Own sister to Pr.of Carruchan.
2 “ “	Montrave Primula	Prince of Albion.
1 “ “	Ellen Terry	Flashwood.

1893.

Aged Stallion	*Prince of Carruchan	Pr. of Wales.
3 yr. “	Summit	Sir Everard.
2 “ “	Holyrood	Gallant Prince.
1 “ “	Royal Gartley	Mount Royal.
Br. Mare	Montrave Maud	Pr. of Wales.
Yeld “	Sunray	Prince of Avondale.
3 yr. “	*Queen of Roses	Prince of Albion.
2 “ “	Dukina	Prince of Fashion.
1 “ “	Lady Lockhart	Darnley's Last.

1894.

Aged Stallion	*Baron's Pride	Sir Everard.
3 yr. “	Holyrood	Gallant Prince.
2 “ “	Colt	Macgregor.
1 “ “	Colt	Gallant Prince.
Br. Mare	Queen of Roses	Prince of Albion.
Yeld “	*Montrave Maud	Pr. of Wales.
3 yr. “	Royal Rose	Macgregor.
2 “ “	Lady Lockhart	Darnley's Last.
1 “ “	Duchess of York	

1895.

Aged Stallion	*Holyrood	Gallant Prince.
3 yr. “	MacEachran	Macgregor.
2 “ “	Knight of Cowal	Gallant Prince.
1 “ “	Colt	Macgregor.
Br. Mare	Royal Rose	Macgregor.
Yeld “	Lady Bute	Ormonde.
3 yr. “	Fuchsia	Williamwood.
2 “ “	May Queen	Macgregor.
1 “ “	Lady Diana	Prince Romeo.
	*Moss Rose	Prince Charlie.

1896.

Aged Stallion	*King of Roses	Rosemount.
3 yr. “	Prince Shapley	Cedric.
2 “ “	King's Knight	Mavis of Airies.
1 “ “	McRaith	Macgregor.
Br. Mare	Belle of Fashion	Prince of Fashion.
Yeld “	May Fly	Macgregor.
3 yr. “	Lady Lothian	Lord Lothian.
2 “ “	Balmedie Queen Mab	Royalist.
1 “ “	Lady Raffan	Sir Everard.
	*Montrave Maud	

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*Marks Champion.

1897.

Class.	Name.	Sire.
Aged Stallion	Good Gift	Gallant Prince.
3 yr. “	Pr. of Albion	Montrave Sentinel.
2 “ “	Sir Christopher	Prince of Loudoun.
1 “ “	Royal Leslie	Prince of Erskine.
Br. Mare	*Lady Lothian	Lord Lothian.
Yeld “	Royal Rose	Macgregor.
3 yr. “	Camilla	Buxon Lad.
2 “ “	Lady Pride	Baron's Pride.
1 “ “	Lady Gartly	Royal Gartly.
	1898.	
Aged Stallion	Montrave Sentinel	
3 yr. “	Pr. Thomas	Sir Thomas.
2 “ “	*Benedict	Baron's Pride.
1 “ “	Colt	Pandora's Prince.
Br. Mare	Mary Kerr	Prince Alexander.
Yeld “	Lady Lothian	Lord Lothian.
3 yr. “	Golden Belle	Goldmine.
2 “ “	Diamond Queen	Prince Alexander.
1 “ “	Maid of Athens	Baron's Pride.
	*Montrave Maud	
	1899.	
Aged Stallion	*Hiawatha	Prince Robert.
3 yr. “	Watchword	Baron's Pride.
2 “ “	Drumflower	Macgregor.
1 “ “	Blacon's Baron	Baron's Pride.
Br. Mare	Montrave Rowena	Duke of Rothsay.
Yeld “	Balmedie Queen Mab	Royalist.
3 yr. “	*Lady Victoria	Baron's Pride.
2 “ “	Jeanie Deans	Baron's Pride.
1 “ “	Topsy Pride	Baron's Pride.
	1900.	
Aged Stallion	*Prince Thomas	Sir Thomas.
3 yr. “	Drumflower	Macgregor.
2 “ “	Baron's Crown	Baron's Pride.
1 “ “	Colt	Baron's Pride.
Br. Mare	Lady Raffan	Sir Everard.
Yeld “	Balmedie Queen Mab	Royalist.
3 yr. “	Jeanie Deans	Baron's Pride.
2 “ “	Topsie Pride	Baron's Pride.
1 “ “	Pomoma	Baron's Pride.
	*Lady Lothian	Lord Lothian.
	1901.	
Aged Stallion	Moncrieffe Marquis	Prince of Carruchan.
3 yr. “	Pride of Blacon	Baron's Pride.
2 “ “	Silver Cup	Baron's Pride.
1 “ “	*Everlasting	Baron's Pride.
Br. Mare	Balmedie Queen Mab	
Yeld “	Lady Margaret	Royalist.
3 yr. “	Topsy Pride	Sir Everard.
2 “ “	Pomoma	Baron's Pride.
1 “	Royal Ruby	Baron's Pride.
	*Lady Lothian	Lord Lothian.
	1902.	
Aged Stallion	Pride of Blacon	Baron's Pride.
3 yr. “	Royal Baron	Baron's Pride.
2 “ “	*Everlasting	Baron's Pride.
1 “ “	Colt	Baron's Pride.
Br. Mare	Cedric Princess	Baron's Pride.
Yeld “	Topsy Pride	Baron's Pride.
3 yr. “	White Heather	Baron's Pride.
2 “ “	*Royal Ruby	Baron's Pride.
1 “ “	Filly	Royal Favourite.

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*Marks Champion.

Class.	Name.	Sire.
	1903.	
Aged Stallion	Silver Cup.	Baron's Pride.
3 yr. "	*Everlasting	Baron's Pride.
2 " "	Baron's Best	Baron's Pride.
1 " "	Colt	Baron's Pride.
Br. Mare	Lady Garnet	Baron's Pride.
Yeld "	*Cedric Princess	Baron's Pride.
3 yr. "	Royal Ruby	Baron's Pride.
2 " "	Baroness of Bargany	Baron's Pride.
1 " "	Filly	Balmedie Queen Guard.
	1904.	
Aged Stallion	*Marcellus	Hiawatha.
3 yr. "	Revelanta	Baron's Pride.
2 " "	Hiawatha Godolphin	Hiawatha.
1 " "	Colt	Baron's Pride.
Br. Mare	Floradora	Prince of Brunstane.
Yeld "	Royal Ruby	Baron's Pride.
3 yr. "	Nelly	Royal Favourite.
2 " "	Lady Monday	Baron's Pride.
1 " "	Filly	Royal Favourite.
	*Lady Margaret	
	1905.	
Aged Stallion	*Royal Chatten	Clan Chatten.
3 yr. "	Perpetual Motion	Hiawatha.
2 " "	Baron Fyfie	Baron's Pride.
1 " "	Colt	Baron's Pride.
Br. Mare	Topsy Pride	Baron's Pride.
Yeld "	Pyrene	Baron's Pride.
3 yr. "	Lady Madge	Balmedie Queen Guard.
2 " "	*Rosadora	Marmion.
1 " "	Filly	
	1906.	
Aged Stallion	Baron's Best	Baron's Pride.
3 yr. "	Warlaby	Rozelle.
2 " "	*Scottish Crest	Baron's Pride.
1 " "		Baron's Pride.
Br. Mare	Chester Princess	Baron's Pride.
Yeld "	Floradora	Prince of Brunstane.
3 yr. "	Veronique	Montrave Ronald.
2 " "	Baron's Brilliant	Baron's Pride.
1 " "	Marilla	Baron's Pride.
	*Pyrene	
	1907.	
Aged Stallion	Ruby Pride	Baron's Pride.
3 yr. "	Clan Forbes	Clan Chattan.
2 " "	*Royal Review	Hiawatha.
1 " "		Baron's Pride.
Br. Mare	Pyrene	
Yeld "	Jean of Knockinlaw	Baron's Pride.
3 yr. "	Minniewawa	Hiawatha.
2 " "	Marilla	Baron's Pride.
1 " "	*Chester Princess	Baron's Pride.
	Filly	
	1908.	
Aged Stallion	Baron O'Buchlyvie	Baron's Pride.
3 yr. "	Gartly Bonus	Everlasting.
2 " "	Baron Hopetoun	Baron's Pride.
1 " "	*Colt	Baron's Pride.
Br. Mare	Royal Ruby	Baron's Pride.
Yeld "	Chester Princess	Baron's Pride.
3 yr. "	Marilla	Baron's Pride.
2 " "	*Nerissa	Baron's Pride.
1 " "	Ferelith	Royal Favourite.

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*Marks Champion.

1909.

Class.	Name.	Sire.
Aged Stallion	Gartly Pride	Baron's Pride.
3 yr. "	Scotland Yet	Royal Favourite.
2 " "	*Fyvie Baron	Baron's Pride.
1 " "	Dunure Footprint	Baron O'Buchlyvie.
Br. Mare	Minniewawa	Hiawatha.
Yeld "	Peggy Pride	Baron's Pride.
3 yr. "	*Nerissa	Baron's Pride.
2 " "	Thelma II.	Baron's Pride.
1 " "	Moira	Baron's Pride.

1910.

Aged Stallion	Scotland Yet	Royal Favourite.
3 yr. "	*Baron Ashvale	Rozelle.
2 " "	Royal Guest	Everlasting.
1 " "	Colt	Everlasting.
Br. Mare	Blossom of Newhouse	Baron's Pride.
Yeld "	*Boquhan Lady Peggy	Hiawatha.
3 yr. "	Thelma II.	Own sisters.
2 " "	Moira	Baron's Pride.
1 " "	Dunure Myrene	Baron O'Buchlyvie.

1911.

Aged Stallion	Bonnie Buchlyvie	Baron O'Buchlyvie.
3 yr. "	Dunure Footprint	Baron O'Buchlyvie.
2 " "	Dunure Index	Full brothers of
1 " "	*The Dunure	Baron O'Buchlyvie.
Br. Mare	Cicely	Baron's Pride.
Yeld "	Royalette	Royal Edward.
3 yr. "	Moira	Baron's Pride.
2 " "	Dunure Myrene	Baron O'Buchlyvie.
1 " "	Nannie	Apukwa.
	*Boquhan Lady Peggy	

1912.

Aged Stallion	Fyvie Baron	Baron's Pride.
3 yr. "	Signet	Allandale.
2 " "	*The Dunure	Baron O'Buchlyvie.
1 " "	Colt	Baron's Pride.
Br. Mare	Boquhan Lady Peggy	See above.
Yeld "	*Harviestoun Baroness	Baron's Pride.
3 yr. "	Dunure Myrene	Baron Buchlyvie.
2 " "	Nannie	Full sisters of
1 " "	Elmer	Apukwa.

1913.

Aged Stallion	Dunure Footprint	Baron Buchlyvie.
3 yr. "	Baronet of Ballindalloch	Baron's Pride.
2 " "	Baron's Seal	Baron's Pride.
1 " "	Phillipine	Bonnie Buchlyvie.
Br. Mare	Myrene	
Yeld "	Dunure Ideal	
3 yr. "	*Harviestoun Phyllis	Royal Favourite.
2 " "	Dunure Chosen	Baron O'Buchlyvie.
1 " "	Lady Betty	Apukwa.

1914.

Aged Stallion	Hugo Baronson	Sir Hugo.
3 yr. "	*Baron's Seal	Baron's Pride.
2 " "	Duncross Radiant	Apukwa.
1 " "	The Birkenwood	Apukwa.
Br. Mare	*Dunure Chosen	Baron of Buchlyvie.
Yeld "	Harviestoun Phyllis	Royal Favourite.
3 yr. "	Lady Mary	Hiawatha.
2 " "	Lady Bountiful	Montrave Mac.
1 " "	Verona	Baron Buchlyvie.

---

*Marks Champion.

CAWDOR CUP WINNERS.

Year.	Name of Stallion Winning.	Name of Mare Winning.
1892.	Prince Alexander	Irene.
1893.	Prince of Kyle	Queen of Roses.
1894.	Prince of Carruchan	Moss Rose.
1895.	Royal Gartly	Moss Rose.
1896.	Royal Gartly	Montrave Maud.
1897.	Prince of Carruchan	Lady Lothian.
1898.	Hiawatha	Montrave Maud.
1899.	Hiawatha	Lady Victoria.
1900.		Lady Lothian (by Lord Lothian).
1901.	Hiawatha	Lady Lothian (by Lord Lothian).
1902.	Hiawatha	Royal Ruby (by Baron's Pride).
1903.	Marcellus	Cedric Princess (by Baron's Pride).
1904.	Revelanta	Lady Margaret (by Sir Everard).
1905.	Hiawatha Godolphin	Rosadora (by Marmion, G. sire, Prince of Brunstane).
1906.	Oyama	Pyrene.
1907.	Baron Kitchener	Chester Princess (by Baron's Pride).
1908.	Memento	Nerissa (by Belmedie Queen's Guard).
1909.	Bonnie Buchlyvie	Moira (by Baron's Pride).
1910.	Dunure Footprint	Boquhan Lady Peggie (by Hiawatha).
1911.	Macaroon	Cicely (by Baron's Pride).
1912.	Scotland Yet	Harviestoun Baroness (by Baron's Pride).
1913.	The Dunure	Harviestoun Phyllis (by Royal Favourite).
1914.	Dunure Refiner	Dunure Chosen.
1915.	Drumcross Radiant	Lady Betty.
1916.	Dunure Kaleidoscope	Rosalind.
1917.	Kismet	No award.
1918.	Craigie Litigant	No award.

BRYDON SHIELD.

Given at Glasgow to best Clydesdale Stallion, 3 years and over, under requirements of size, weight and soundness. Won finally in 1918 by Mr. James Kilpatrick; but Mrs. Brydon has donated another to the memory or her late husband, Mr. Robt. Brydon, who had done so much for the Clydesdale horse in Scotland. The shield was first competed for in 1904, and was won as shown:

1904	Labori.
1905	Marcellus.
1906	Memento.
*1907	Oyama.
*1908	Perfect Motion.
*1909	St. Clair.
1910	Montrave Viceroy.
1911	Dunure Footprint.
1912	Ascot Chief.
1913	The Dunure.
1914	Dunure Stephen.
1915	Drumcross Radiant.
*1916	Bonnie Buchlyvie.
1917	Kismet.
*1918	Craigie Litigant.

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*Won by Kilpatrick.

Ontario Department of Agriculture

FIFTEENTH ANNUAL REPORT

OF THE

Vegetable Growers' Association

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

Printed by
THE RYERSON PRESS

To His Honour, LIONEL H. CLARKE.

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I herewith present for consideration of your Honour the Annual Report of the Ontario Vegetable Growers' Association for 1919.

Respectfully yours,

MANNING W. DOHERTY,

Minister of Agriculture.

TORONTO, 1920.

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Ontario Vegetable Growers' Association

OFFICERS AND DIRECTORS, 1920

President: W. S. Eborall, Beamsville.
First Vice-President: Maurice May, Tecumseh.
Second Vice-President: G. H. Poad, London.
Secretary-Treasurer: J. Lockie Wilson, Toronto.
Auditor: D. H. MacLennan, Toronto.
Executive Committee: The Officers, and F. F. Reeves, J. J. Davis, A. H. MacLennan, and Henry Broughton.
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Representative to Canadian National Exhibition: F. F. Reeves.
Representative to Central Canada Exhibition: Wm. Trick.

FINANCIAL STATEMENT.

December 1st, 1918, to November 30th, 1919.

Receipts.

Balance on hand from 1919	$659 15
Grant	800 00
Interest	12 16
Membership fees	71 10
Garden Competition entry fees	35 00
Field Crop Competition entry fees	222 00
	$1,799 41

Expenditure.

Membership Competition prizes, 1918	$21 00
Auditor	5 00
Wreath for late S. C. Johnston	15 00
Rental of hall for Convention	25 00
Convention dinner	35 20
Stationery	28 00
Tissue paper and cartons for exhibits	48 60
Boxes for tomato and onion exhibits	57 85
Express and cartage on boxes	16 33
Expenses *re* exhibits at Toronto, Ottawa, London and Kingston	69 91
Expenses of Executive and Directors' Meetings	253 90
Prizes in Field Crop Competitions	682 00
Prizes in Garden Competitions	348 00
Expenses of delegates to Detroit Convention	85 75
Membership Competition prizes, 1919	24 00
Balance on hand	83 87
	$1,799 41

Audited and found correct,

(Sgd.) A. H. MacLennan,
Auditor.

January 5th, 1920.

OTTAWA EXHIBIT BRANCH
ONTARIO VEGETABLE GROWERS ASSOCIATION
DONATED TO ORPHANS' HOMES OTTAWA
DIPLOMA
DIPLOMA

Ontario Vegetable Growers' Association

FIFTEENTH ANNUAL CONVENTION.

The Annual Convention of the Ontario Vegetable Growers' Association was held in the Y. W. C. A. Building, Ottawa, on January 15th, 1920, and was the largest and most enthusiastic ever held by this Association. The addresses given were of the highest possible educational value, and will, doubtless, prove of lasting benefit to all concerned. It is expected that 1920 will be a banner year for the Association.

PRESIDENT'S ADDRESS.

W. S. Eborall, Beamsville.

It is a very great pleasure and privilege to me to welcome you to the Fifteenth Convention of the Ontario Vegetable Growers' Association. You will have noticed in the address of my predecessor, Mr. J. J. Davis, that the late war had a great adverse influence on our organization as regards members and you will also see by the Secretary's report how necessary it is to try to organize new branches and to increase the membership in our existing branches. I promised when I was elected President that I would do all in my power to increase both as I considered it was the most important matter to be attended to. There was an increase in numbers in a few branches this year, especially the London Branch, which added about sixty-five per cent. to its membership, and there has also been an increase in the Clinton and Louth Branch. Two new branches were formed, one at St. Catharines and one at Beamsville, which were the means of forming a new division in the Niagara District, causing an alteration in the other divisions which was not satisfactory to all concerned, but we did our best, as we thought, for all. Mr. A. H. MacLennan and myself were appointed to continue the work of organizing other branches. One has already been formed at Stamford, but it takes much time and a great deal of work to get things going.

In going around among the growers almost all of them have an excuse for not forming a branch. They say there are very few real gardeners in their neighborhood, and that most of them grow fruit, so they think they should not join us. Growers at Dunnville, Stamford and Burlington gave that excuse, and you will find that is generally the real reason that more branches are not formed. They have no scope. There are so few in the branches that it makes co-operation almost impossible, except on a very small scale. I have come to the conclusion that if we could, in some way, call ourselves by some other name it would be better. I would suggest "The Ontario Vegetable and Garden Fruit Growers' Association." Then, I believe, we would grow in leaps and bounds because in most branches, with one or two exceptions, fruit and vegetables are grown and you would be surprised to see the number of men who are enquiring about the best varieties of small fruits to grow. It appears to me that if we took in the two there would be a greater opportunity for us to supply each other with the different fruits and vegetables and co-operate among ourselves so as to save the profits of the middleman. It would take up too much time to tell you all I heard when travelling about Ontario, but the tendency seems to be in the direction of small fruits and vegetables. It is like holding a red rag to a bull to mention vegetable growing only.

I had the privilege this year of going around with Mr. MacLennan to visit all the branches. It was a great education for me to see the different parts of the Province and to have the opportunity of seeing the various methods of growing vegetables. It was also a pleasure to be in the company of Dr. Stone and Mr. Ross, of Vineland, and to hear their methods of dealing with plant diseases and insect pests and fungus diseases. I believe that I am the first President who has given three weeks of one's valuable time to visit all but two of the branches.

You may expect me to touch upon my opinion of the different districts and explain to you the soils and marketing opportunities, but it is not my intention to do so, as I do not think it would be fair to any of them. It is not my intention to boom any district. Of course, there are some places where land is better for vegetable growing.

Where land is held at such a prohibitive price as at Bartonville, Burlington, Ancaster and Toronto, where the situation is good and markets convenient, the land is becoming more valuable on account of the cities growing and the land is being cut up for building purposes. So for me to select any one place as the best would be unjust on my part, but I can say this with perfect honesty, that any one of the places we visited has good land and if the gardener was energetic he was doing well. I have come to the conclusion that all the way from Sarnia to Ottawa and from Ottawa to Niagara Falls there are great opportunities for good live gardeners, and if I had to choose which section I would select if I were starting again I can truthfully say that I could make a good living on any of them.

This year I was on hand at the Toronto Exhibition when the vegetables came in, and I saw for myself how they stood shipping. On the whole they arrived in fairly good condition, but, in some instances, some of them had been packed in paper, such as cabbages, celery and melons, and in almost every case when packed like this they had become heated and started to decompose. Wherever a case was opened in which excelsior or some other straw had been used, the vegetables were in good shape. There were a few boxes of tomatoes that had been damaged, but we were able to make them look presentable. It was those that were too ripe when shipped that suffered most. In looking over the situation carefully I have come to the conclusion that some of the executive should be present at Exhibitions to see the vegetables come in, and not leave it all for the secretary to do. In the case of any rotten ones being among the exhibit they might have them repacked and made presentable. For my part I cannot see why we should be paying out so much money for these tomato boxes. We should select the best commercial packages; something that we could use in our business; because the idea is to give prizes for the best package, and I think we could improve along these lines. Of course, this is my personal view, but I think that I am right. With the increased number of branches and exhibits we should be able to have an exhibit all our own, as I am of the opinion that we should, if we all pull together, have the finest exhibit that was ever put up. I think that this year our exhibit, which was a grand one, was spread out too much. It not only makes it difficult for the judge, but the public, unless they are very much interested, will not take the time and trouble to study the awards. If we could put up an exhibit and keep the varieties together I believe we would have a better effect. I think we should only give prizes for the best standard varieties in our Field Competition. I believe we could do more to educate the growers if our vegetable experts would select the best commercial varieties for us and the heaviest croppers. There is a lot of talk now about standardizing and yet prizes are being given for vegetables that should not be seen upon the table. What we want is fewer varieties, something pleasing to the eye, of good flavor and not coarse. By this means we would be enabled to co-operate if we wanted to, which is impossible when there are so many varieties.

The executive this year at the invitation of the Vegetable Growers of America visited Detroit to attend their Annual Convention, which was enjoyed by all who took advantage of the opportunity to go there. It was the best Convention and finest outing I have had since I have been in this country, and I believe we all profited by taking the trip. The first morning we were there we had the pleasure of hearing Mr. MacLennan and Prof. Crow give their addresses, which were very good and both well received. In the afternoon we were invited to take a trip on the beautiful St. Clair which extended over three hours. The next morning we were to visit the Detroit market. Mr. Poad and myself took advantage of this. I was very much surprised at the way they market their vegetables. They all use Bushel "Skips." Tomatoes, cabbage and melons were the principal crops on the market. I was wondering how they sold to private customers in such large quantities, but they told us everything was wholesale until nine o'clock. It is a very large market; one could put in hours going all around it I was surprised at not seeing any eleven quart baskets of vegetables on sale. I found that if you wish to talk to a vegetable grower and get any information you should not go to him on the market for he is busy enough without being bothered by anyone. I have found that out lately in my organizing work, but there were a few of them who would talk a little. They were surprised to see such a good display of vegetables put up by the Ontario Vegetable Growers' Association at the Convention. Some of them said they would like to come over the border to see what we were doing. One gardener said Canada had them all beaten; he said that the Americans were in too big a hurry and did not take the interest in the work or do it so thoroughly as we do here. I did not have the chance of going to the lectures the second day as they were all over by twelve o'clock, so I only heard them arguing over their income tax which was not very interesting to us. At one o'clock Mr. Poad and I took a street car to the Ferry Seed Farms. As most of you know, farms of that kind are not very interesting, as everything in the way of crops for seed purposes are taken off at different times in the season, and, of course, it does not look very good, but this farm was kept in good shape and made one feel that their seed would always be reliable. There is something that strikes one in going over a large establishment like that, and that is the cleanliness and the orderly way in which the things were kept. In their barns and tool house everything was in place and every spade and shovel, hoe and cultivator was clean and hung up in the right place. It was a sight for sore eyes, as it is a disgrace to go to some establishments and see how things are allowed to lie around. Their greenhouses where they try out the seed are as clean as one's house, and what is most striking is the system in the barn, everything being in order, so that everything else is done in order and neatly. At seven o'clock we were due to attend a banquet which was everything one could desire, and I was pleased to see that our worthy Secretary was on the toast list. He certainly did his best for his country, and I am sure his remarks were appreciated by all. You will see that we were fully employed and the greatest part of the Convention was social.

> **"'Tis not in human nature to command success;**
> **But we'll do more,—we'll deserve it."**

G. H. Poad: There is not much time for discussion, but there are many things on that address which I would like to go into. If we change the name of the Association, when could that be done and in what way would you recommend?

J. Lockie Wilson: A resolution should be passed here to-day recommending a change of name. Our Association would have a wider field by this proposed extension, and we could then take in the growers of small fruits. The next step would be to have the endorsation of the Minister of Agriculture and an Act passed changing the name.

A. H. MacLennan: I would like to further the suggestions of Mr. Wilson and Mr. Eborall with regard to changing the name of the Association. I have been around a good deal this summer trying to get new branches started, and I find that 60 per cent. of the growers of vegetables also grow small fruits. We want to get these men connected up. The vegetable growers represent only about one-third of the growers of vegetables and small fruits. When you ask a man to join the Association the first thing he says is that his main line is small fruits, not vegetables. We should change the name so as to take in these growers. Very few of them belong to the Fruit Growers' Association.

A Member: The Waterford section markets a large quantity of small fruits and a great many vegetables. It seems to me that it would be very encouraging to the small fruit growers to have our name changed in order to bring them in.

J. Lockie Wilson: How would the "Ontario Vegetable and Garden Fruit Growers' Association" do? By using the word "Garden" we get over the difficulty of conflicting with the Ontario Fruit Growers' Association. We are not changing the name of the Vegetable Growers, we are just adding "Garden Fruit." We are established as the Ontario Vegetable Growers and we are known as that to the Department and the grant is paid to the Ontario Vegetable Growers' Association and it is voted for 1920.

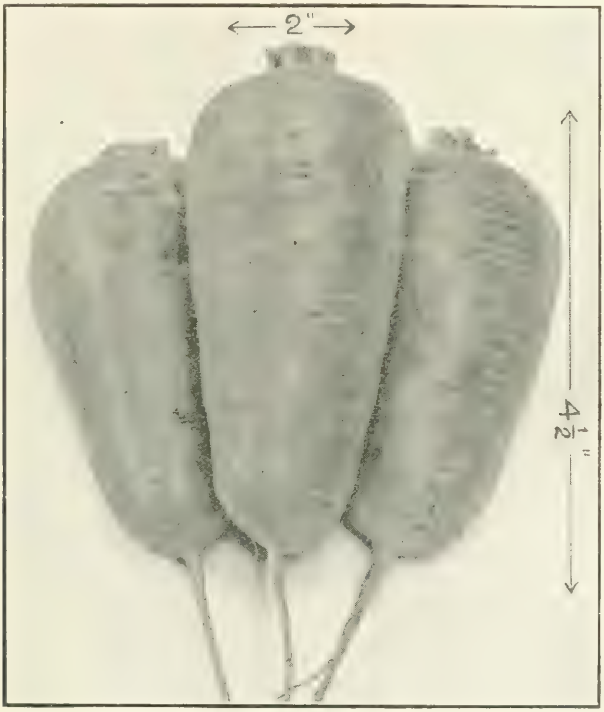
J. J. Davis: I am sure there will not be any objection from any of the vegetable growers, and it is a step in the right direction, which we tried to take some time ago, but met with objection. At London, for instance, there are a considerable number of vegetable growers, but more are interested in small fruits.

Moved by J. J. Davis and seconded by M. May: That the words "Garden Fruit" be added to the title of the Association and that in future the title of our Association be "The Ontario Vegetable and Garden Fruit Growers' Association" subject, of course, to the approval of the Department. Carried unanimously.

REPORT OF THE SECRETARY-TREASURER.

J. LOCKIE WILSON, TORONTO.

I am sure that those interested in gardening in the vicinity of Ottawa are pleased at the decision of the Directors to hold the Convention in this city. Although entailing additional expense, we felt that as the Ottawa Branch had done such good work in the past, they were entitled to every consideration, and if by the holding of our Convention here, new branches will be formed and our membership largely increased, our Eastern Convention will not have been held in vain. Harmony has always prevailed in our deliberations and as earnest patriotic men you have spared no pains in communicating to your fellow gardeners any new methods adopted that have proved successful.



Chautenay Carrot.

The possibilities of the Province in regard to the growing of vegetable crops are becoming more and more evident each year. There is no lack of suitable soil in close proximity to our large towns and cities, and the gradual improvement of the main highways throughout the country and the use of motors and motor trucks have eliminated the disadvantages under which market gardeners living some distance from their customers were formerly handicapped in their marketing and also in teaming fertilizers and supplies from cities. It is true that occasionally we have a hot dry season, but the up-to-date market gardener has reduced losses from this cause to a minimum by the instalment of sprinkling systems, which pay for themselves in a very short time. There are many sections in this Province where vegetable growing could be profitably carried on, both as regards soil, climate and water conveniences, which as yet have not been utilized. There are also many districts which have hitherto been considered as unsuitable for the vegetable grower, which will some day become valuable for market gardens.

The cold rains during the spring of 1919, were somewhat of a handicap, followed later by a long period of drought which lessened the crop to a considerable degree, but with the fairly good prices prevailing, the year, on the whole, has been a favorable one for those engaged in vegetable growing.

A number of meetings were held during the year and the following new branches were organized: Beamsville, Blenheim and St. Catharines. With enthusiastic officers at the head of these branches, I am confident that success will crown their efforts.

The executive has devoted some time in an endeavor to select suitable packages for the shipment of vegetables. A report on their investigations will, doubtless, be submitted to the Convention.

The Vegetable Field Crop Competitions continue to meet with the approval and hearty support of the members of this Association. For these competitions the Province was divided into five districts, one more than the previous year, viz: (1) Ottawa, Kingston, Belleville and Peterboro. (2) Welland, Clinton and Louth, Beamsville and St. Catharines. (3) Tecumseh, Simcoe, Blenheim and Dunnville. (4) Blackwell, Sarnia, Stratford and Sarnia Independent. (5) Toronto, London and Brantford.

The members of the branches in each district competed among themselves for prizes offered in their district. There had to be at least one-eighth of an acre in one block and not less than ten entries in each kind of vegetable from each district. The crops selected were:—cabbage, celery, musk melons, onions, potatoes and tomatoes. Cabbage was judged about June 15th; potatoes, July 10th; and the other crops about August 10th. Members were allowed to compete in any or all of the crops mentioned. Judges were supplied free by the Ontario Department of Agriculture. The prizes offered were: $20, $18, $16, $14, $12 and 10.

The prize winners in the past have been obliged to exhibit at the Canadian National, Central Canada, Western Fair and Kingston Industrial. The large number of places at which the prize winners were obliged to exhibit has become burdensome and expensive and I would suggest that, much as we would like to exhibit at all these Exhibitions, it will be necessary to save expense to cut out at least two of these Fairs and would suggest that the prize winners be obliged to exhibit at only two of them. This, of course, would not prevent the other Exhibitions from offering substantial prizes open to competition for any of our vegetable growers who wish to exhibit at their fairs, and I am sure that our Association will be willing to encourage in every reasonable way our growers to compete for the prizes offered by the Fair Boards.

We again held this year very successful Garden Competitions for which the following prizes were offered: 1st, $30; 2nd, $20; 3rd, $10; 4th, $7; 5th, $5.

Complaint has been made that some of the earlier varieties of tomatoes in the Field Crop Competitions were not judged in time and that the best part of the crop had been picked before the judge arrived. The fault of this lies largely with the secretaries of local branches who failed to notify me in time, that the crops were ready for judging. Complaint has been made by some of the judges that the boundaries of some of the crops were not clearly marked. I would suggest that in future stakes be driven in round every plot entered for competition.

The Ontario Department of Agriculture is arranging to have the vegetable prize lists at the 360 Fairs in the Province revised and brought more into line with present day conditions and we are urging that larger prizes be offered at these exhibitions for your products.

During this Convention a committee of the executive will interview the Minister of Agriculture *re* the proposed legislation to be brought down for the grading of potatoes. They will, doubtless, make a report on their work before the close of the Convention.

Another matter that will come before you for your consideration will be the proposition of procuring a plot of land in some central part of the Province for the testing of varieties of vegetables and demonstration work. It has also been suggested that in addition to the vegetable grounds there should be a Horticultural Demonstration section which would embrace all kinds of flowers, shrubs and landscape work. The control of this plot would probably come under the Horticultural Branch of the Dominion Government.

As usual we had a membership competition and the successful branches were —London, Clinton and Louth, Peterboro and Welland.

Owing to the fact that our prominent vegetable growers are usually engaged in their own gardens during the judging season, we have found it very difficult to secure their services as Field Crop Judges. Many of them refused to go out this year on this account. Up to this time the judging has not been uniform and for some time I have been endeavoring to arrange to have a short course for vegetable field crop judges. It is vitally important that we should have a more uniform system and the only way to arrive at this is to have our judges meet and get accustomed to the use of the score card. This is a matter which might receive the earnest attention of this Convention and I shall be glad, indeed, to have any suggestions from the delegates present.

The Annual Reports of our Association are in great demand and continue to meet with the approval of those engaged in gardening.

I received a letter from the Director of the Fruit Branch, Department of Agriculture, saying that his assistant would meet a committee appointed by you, and we got into touch with the Fruit Branch yesterday, and a representative from it will be here this morning to meet us.

Any member of the Association in the Province can organize a new branch; it only needs energy and enthusiasm on the part of one man and you can make it go. When I came into the Department twelve years ago, there were only a few hundred members in the Horticultural Societies of this Province and to-day we have over 20,000 members in our Association each paying $1.00 a year fee, and some societies pay as much as $10 per year for affiliation with the central association.

There has been the kindest feeling in this Association in the years I have been connected with it. The members have worked together, hand in hand, in perfect harmony, with no dissensions, and I look forward to the addition to our name to bring in hundreds—if not thousands—of garden fruit growers in the Province of Ontario. And, after all, numbers count. You cannot go to the Government and ask for as substantial a grant as you should have if you have not a membership that runs into thousands, as it probably will in the future.

I trust that the Association may continue to prosper, and that this may be the most successful Convention you have yet hold.

REPORT OF THE VEGETABLE SPECIALIST FOR 1919.

A. H. MacLennan, Toronto.

I have a considerable number of things to say to-day. The first is that there are two men sitting at this table that I want to thank for many a help this past summer—I refer to your President and to your Secretary. Your President came this summer on my invitation and spent three weeks of his valuable time going around with me to the various branches, and has helped me in a good many ways since. I have used him, and one or two other members of the Association as a sort of advisory council. And as to your Secretary, Mr. Wilson, if it were not for the fact that I go over to his office very frequently and get information regarding local branches, which he always supplies very kindly, it would be very difficult to perform some of the work I have to carry on. It is difficult in that I have not alone the Association, which represents about one-third of the vegetable growers in the Province, but I have also that other two-thirds who are not members of the Association to attend to.

I wish to testify to both Mr. Eborall and Mr. Wilson my appreciation of the interest they have taken and the assistance they have given me in the two years I have been connected with the Association.

The work of the past year has been similar to that of former years with a beginning being made on fertilizer work. The season was especially dry during the latter part of June, July and into August and in many cases the crop was cut down very considerably. At the same time it was ideal weather for insect growth and the injury was exceptionally heavy this year.

A considerable amount of work was done this spring on experiments for the control of the cabbage maggot. This was started four days after the plants were set out and continued for three applications. It was again very clearly shown that Corrosive Sublimate, at the rate of one oz. to ten gals. of water, would give perfect results. Work was done also at Blenheim, Leamington and Peterboro on cabbage fields where the insect was working and the plants had began to wither under the warm sun. With a hoe earth was drawn from the sides of the plant so as to expose the maggot and then Corrosive Sublimate poured against it. The plant was left for one or two hours and then the earth drawn back. In this way more than seventy-five per cent. of the crop which had been badly infected, was saved at Blenheim and Peterboro. At Leamington an average of ninety per cent. was saved.

Black Heart in celery was a much more serious problem this year than before owing to the very large numbers of Tarnished Plant Bugs attacking the fields. More especially was this so during August, when a few very hot days seemed to make them more voracious. Black Leaf "40" was applied at the rate of one pt. to fifty gals. of water with two pounds of soap added as a sticker. Where the attack was very severe we used as concentrated an amount as one pint to ten gals. using a knapsack sprayer and found that we could check them successfully so that the injury they did was cut down very considerably. Much more work will need to be done in the future on this insect and also to get the growers to remove weed patches from near the celery beds, more especially if they contain the common red root or pig weed on which the insect also lives.

Celery Blight was not very prevalent this year, owing to the excessive dry weather, although, the celery that was thoroughly sprayed with Bordeaux mixture showed better growth. This year we tried out a dust test on celery made up of ten pounds of Bordeaux dust; fifty pounds of Sulphur and forty pounds of Hydrated Lime or Talc. The results from this, which was used on a field of celery in Thedford, were so marked that it will be tried to a larger extent next year. We also tried it out on early potatoes in the Leamington district with fair results. If we can obtain dust that will give as satisfactory results as Bordeaux liquid, it is much easier and quicker to handle.

Onion Thrip was very bad this year and cut the crop down more than fifty per cent. The hot, dry weather was the best condition for its spreading and the injury was done in many cases before being noted. However, in some cases an application of Nitrate of Soda, from fifty to one hundred pounds per acre, helped considerably to bring the crop through. We tried out Black Leaf "40" and Kerosene Emulsion, but owing to the lateness of application the results were not very satisfactory. This is another insect that will require a large amount of work for a couple of years. At the Burlington station, where we had a man working with Prof. Caesar, it was found that Black Leaf "40" at 1-500 with three pounds of soap, if put in with a fine nozzle held close to the plant, gave excellent results, but should be repeated twice to get all hatching from the eggs already laid.

Vegetable Seed Growing on O. A. C. Grounds.

The control of Radish and Onion Maggot by the use of Corrosive Sublimate was also tested out and the results are very promising, although they have not been tried out on a commercial scale. The Radish are larger and a larger percentage are suitable for market. The only trouble at the present time is the method of application on a commercial scale.

Aphids were very troublesome on late cabbage and cauliflower; these were controlled by the use of Black Leaf "40" one pint to ten gals. of water with one-half pound of soap as a sticker, using the Vermoral Knapsack sprayer. It is necessary to have the spray strike the insect in order to get satisfactory results, but where this is done carefully and thoroughly one application is all that is necessary to destroy this pest.

The green worm in cabbage was also controlled; using 1¼ oz. of Keating's Powder to a three gal. Knapsack sprayer. (Pyrethrum powder, if fresh, is just as good.) This amount would do about 1,500 to 2,000 cabbages and where carefully done and the liquid hitting the worm, satisfactory results were obtained. If carefully done before the heads are formed this insect on the cabbage or cauliflower may be controlled easily, using one part of Arsenate of Lead to ten parts of Hydrated Lime. After the heads have formed use one pound Paris Green to six gals. middlings. Mix thoroughly and apply with twirling motion of the thumb and first two fingers. Do not use this latter on cauliflower. An acre a day can easily be done and rain does not affect it.

REPORT ON SEED RECEIVED FROM PLANT BREEDING STATION, FORT WILLIAM.

Peas—varieties received: Carter's Earliest of All, Best Extra Early, Richard Seddon and American Wonder.

Seed all sown March 6th.
Carter's Earliest of All, picked June 19th.
Best Extra Early, picked June 23rd.
Richard Seddon, picked June 30th.
American Wonder, picked June 30th.

The peas were left until all were full and cleaned up at one picking. Germination of all was good. A few of all varieties were drowned by the heavy rains in May. The best and most prolific was Carter's Earliest of All. Richard Seddon coming next but vine rather too long, with Best Extra Early and American Wonder fair in comparison with the others. Comparing the crop with some from seed of the same varieties bought from seedsmen there was better germination and more vigorous growth. This also applied to the spinach seed.

Some of this seed was handed over to Messrs T. Kirby, R. Major, and Geo. Barnes for trial and their experience was the same as my own.

FRANK F. REEVES, Humber Bay.

Carter's Earliest of All	Grew 75 yards and picked 8 baskets.
Best Extra Early	Grew 90 yards and picked 9 baskets.
Alaska P. B. 360	Grew 5 yards and picked ½ basket.
Richard Seddon	Grew 28 yards and picked 4 baskets.
Thomas Laxton	Grew 90 yards and picked 7 baskets.

THOS. KIRBY, Islington.

FERTILIZER REPORT FOR 1919.

At first thought the use of fertilizer appears to most growers as of little value owing to the amount of barnyard manure that they have been able to obtain and the high cost of fertilizers. However, this present winter is teaching them a different lesson. Manure in many cases is almost impossible to obtain and they are beginning to look for other means of keeping up their fertility. Besides that most growers who undertook any of the experiments found that notwithstanding the dry weather fertilizer was giving them results, more especially after they were shown what to look for and the real results that they had. In many cases they have requested that the work be carried on further and even where they did not are buying fertilizers on their own initiative to carry on the work. They began to see that they could obtain valuable results with much less manure if the proper type of fertilizer is applied. The greatest mistake made was in the lack of cultivation, many of them thinking it unnecessary on account of the dry weather. Where we had sufficient cultivation even with dry weather conditions appreciable results were obtained. In order to obtain results worth while this experiment should be enlarged and carried on for a number of years.

Besides fertilizers it will be necessary to begin work on green manures as fertilizers, of themselves, except in specified instances, will not give the desired results. The uses of the various types of cover crops such as rye, clover, vetch and buckwheat must be tested out and notes made of the loss to the man from not using the land and the extra amount of land he will require to carry on this type of work.

Cost of Production.

Our survey of two years ago, showed very plainly that few men knew, even remotely, how much a crop costs to produce. With prices little if any better than before the war, with labor, coal and other things entering into the growing of vegetables having advanced about 100 per cent., it is only the strong demand for these products that has saved the situation. It would seem well, therefore, to begin this year, some work tending to help the growers along this line.

For these reasons I would like to request the Ontario Vegetable Growers' Association to appoint a committee to act with me in laying out this work, as it is very necessary that as even a distribution as possible be made, and also that every man chosen will appreciate the value of the work. The more active cooperation that is received from the practical vegetable growers in all of the work of the Vegetable Specialist, the greater will be the results obtained and the greater good that will be done to themselves.

Another point that I would like to make is that it has occurred to me in looking over the prices paid in the past few years for the market gardeners produce that it would be well if some means could be found, whereby the public could be kept informed at all times in regard to the quantity of the crop; when it is at its best; what they could do with it. This work was done to a certain extent during the war by the Food Board and it would seem to me to be a good thing for the vegetable growers to take up. If we look over the price lists of the past few years we will find that this year's prices for almost all products of the garden are the same as in 1914, with the cost of labor and all other necessaries for plant growth fifty to one hundred per cent. higher than they were in 1914. We must look somewhere for the explanation, and the only one that seems feasible is that increased consummation demands practically all of the products of the garden. Before the war a considerable quantity of the crop was plowed down very often. If anything should occur that this condition should return where would our growers be? For this reason I would like to bring to your careful consideration this matter and the before mentioned committee could work with me on this also.

A MEMBER: You say that three applications of Corrosive Sublimate are necessary?

A. H. MACLENNAN: Sometimes one application will do, but generally three are needed.

A MEMBER: If you start three or four days after plants are set out, do you need to remove the earth from around the plant?

A. H. MACLENNAN: No, not in the regular treatment. Where one works the first three or four days after plant is set out, and then for three successive weeks, it is not necessary to remove the earth.

A MEMBER: If the Corrosive Sublimate is poured against the plant will it not injure it?

A. H. MACLENNAN: You need not worry about that. Prof. Caesar wishes to use double the strength that I do; but if you use double strength it is liable to burn the plant.

A MEMBER: Two years ago Mr. Madden treated some of Mr. Atkins' plants double strength and he burned every one.

A. H. MACLENNAN: One of the hardest things in my work is to get growers acquainted with the insects, and to get men to drop me a line to tell me there is something wrong. I remember last summer going with Prof. Caesar to the farm at Burlington where he had work going on. He had passed the onion patch many times, going back and forward without noticing anything wrong, but when we came to the onion patch in our inspection I noticed at once the yellow appearance, and when we went over the patch we found it to be practically destroyed with onion thrip.

I supplied funds at Burlington for one man to start in on vegetable insect work, and I hope to considerably increase this work in the future.

A MEMBER: What sort of a spray do you use?

A. H. MACLENNAN: The Vermoral is in my opinion the only spray. It is a little French knapsack sprayer, and the only machine I have ever seen that gives as thorough satisfaction as you want, and that puts the stuff on in as fine a spray as you want. Mr. Leslie, who is in charge of the Plant Breeding Station at Fort William, sent me a quantity of seed—peas and spinach. I sent some to several of the gardeners in Toronto to try out and the results were very gratifying. If we can get spinach and pea seed grown in the north which shows as much increase as this did this year, at a reasonable rate, it means a splendid result.

This year I am asking Mr. Leslie to grow Carter's Earliest of All and American Wonder. The question is whether we would like him to experiment on these in a larger way.

I have tried in every way to get the thing working, but I have run up against the stumbling block that it is hard to get the practical men to tell us what they are up against. I would like to have a man in each district to whom I could go to talk over the prospects of his district and he would talk them over in his own branch. In this way we would probably get results. Several gentlemen,—Mr. Eborall, Mr. Reeves, Mr. Cooke, Mr. Hellerman,— have been an unofficial committee working with me since I took charge of the work two years ago. I would be very pleased if the Association would appoint a committee of practical men to work with me on the different points that come up. The expense would not affect the Association and I think you would get much better results and we could keep in touch with every point where experimental work is being carried on.

W. S. EBORALL: One point upon which you will all agree is the necessity of securing such a committee to work with him as Mr. MacLennan has suggested in his experimental work.

A. H. MacLennan: Another matter I wish to bring up is a letter from the Fruit Commissioner's Office, and it applies more to the onion growers than to anyone else:

Heated Refrigerator Car Service.

"Application on behalf of the railway companies of Canada has been made to the Board of Railway Commissioners by the Canadian Freight Association for permission and authority to increase the charges for the use of heated refrigerator cars to 1½ cents per mile, minimum $2.00, in addition to the regular freight rates.

The present charges for heated refrigerator car service, as authorized by the Board of Railway Commissioners under General Order No. 173, dated October 26th, 1916, is one cent per mile, minimum $2.00. The Railway Companies claim, however, the expense of providing this service has increased at least fifty per cent. since the existing basis of heated car charges was authorized.

It is proposed to make the increase applicable in both eastern and western territory and would therefore, affect all late fall and winter shipments of perishable farm and orchard products throughout Canada.

As fruit and vegetable shippers are particularly concerned, we direct your attention to the application in order that it may be discussed in local communities and objections made to the Board of Railway Commissioners if it is decided the increase is unwarranted.

If desirable, we will notify you of all meetings of the Board at which this matter will be considered.

Yours truly,

(Sgd.) G. E. McIntosh,

In charge Transportation.

Mr. Hart and I took it up with Mr. McIntosh to get him, if possible, to delay action on that until the annual meeting of the Association. Immediately on receipt of the letter I telegraphed to Mr. McIntosh to delay the hearing if possible, and otherwise to make the case as easy as possible for us. I have not heard from Mr. McIntosh since, but I thought it well to bring the matter to your consideration.

J. J. Davis: Mr. MacLennan recommended a committee to collect information regarding prices in the different parts of the Province. I take it that the idea is to arrange for shipment from one district to another so that the distribution of orders will be more equalized?

A. H. MacLennan: We should get some kind of a service such as the Food Board has where advice would be sent out to tell the people when the stuff is coming, how big the crop is and whether they should buy early or late; and try to spread it around,—not so much only through Toronto, but in the smaller towns where the demand has not been felt. In some districts where conditions are especially favorable to a certain crop the growers specialize in it, with the result that the market is likely to be overlooked; whereas, if the surplus could be sent to other districts where not so much of it is grown it would find a ready market.

G. Hellerman: Would such a service take in fruit growers, vegetable growers, etc.?

A. H. MacLennan: Yes, everything along that line.

The following members were selected for the Committee: Messrs. F. F. Reeves, W. J. Cooke, C. F. Kitney, W. S. Eborall, T. M. Mulligan, M. May and Hy. Broughton.

Mr. Wilson then moved, seconded by Mr. Hellerman, that the Committee be appointed; and the motion carried unanimously.

Upon motion of J. Lockie Wilson, seconded by J. G. Fleming, Mr. A. H. MacLennan was added to the Executive of the Association.

R. J. BUSHELL: In his address Mr. MacLennan referred to Celery Blight. I would like to ask if the trouble lies at the root of the celery, or only at the top? The references have all been made to the leaf, stalk and heart.

A. H. MACLENNAN: It appears at the root but we can ward it off from the top.

R. J. BUSHELL: Can you explain the cause at the root?

A. H. MACLENNAN: The late blight shows generally just when we cut the smaller roots and the plant spreads out: it is caused sometimes by giving a deep cultivation towards the end of the season when it should only have a light one. Celery blight will stay in the soil, and if you have it one year you may have it another if the conditions are favorable.

Dutch Sets.

R. J. BUSHELL: The point I want to bring out is that blight is not altogether attributable to the top but somewhat to the root. A school trustee very well versed in the growing of celery said the blight occurred in the root, not in the top. He pulled up a plant and showed the blight in the root.

A. H. MACLENNAN: Disease is the lessening of vitality in the plant in some way, and it may affect any part. One of my men told me of a lettuce grower who had a burning in his plants. He attributed it to the ups and downs of temperature; there was no disease and apparently the soil was in good condition. But many little things may affect a plant. In greenhouses, for instance, it has been found that circles or flaws in the glass will draw the sun's rays and the heat may become so intense in those spots as to cause burning.

In all plant disease work there has been a primary cause, and disease in practically all cases is secondary, not primary.

J. F. REEVES: In connection with the northern grown seed, Mr. MacLennan told you that it had arrived rather late. Personally, I hope he has another late arrival this season. That is, speaking from a selfish standpoint. Mr. MacLennan sent me a little more seed than I could use and I distributed it among three of my neighbors. The results in all cases were as he stated. The seeds were tried under the same conditions as we try others. In all cases germination was earlier than the commercially bought seed, the growth was heavier and the product finer. That applies even more to the spinach than to the peas. I never had spinach so strong. I have heard people speak of spinach as large and firm as a head of cabbage, but I never believed it. This spinach was as large and heavy as the Green Silver Leaf. I cannot get that from commercial seed. I grew it alongside of a few varieties of commercially purchased seed, and when the plants were matured, a blind man running his hand along the row could tell the difference.

A. H. MACLENNAN: Mr. Leslie has about 40 or 50 pounds of both spinach and pea seed to give me this year. The spinach he grew is fine; the seed originally came, I think, from O.A.C. supply. I would like to distribute this seed in small quantities to men who are vitally interested in spinach and peas to let them test out the seed gradually. I want to spread it around far enough this year so that everybody who is interested will have a chance to see what it is like, and in a few years' time we may hope to get seed that is worth while. If any Branch that is interested will drop a line to me at Toronto I will try to supply a little seed.

J. G. FLEMING: Mr. MacLennan touched on one thing that I think is of vital importance to the onion and potato growers in this Province: that is, the increase in freight rates on cold storage or heated cars. I think it is up to this Association to protest this increase as strongly as possible. It means, for instance, that if we were holding anything in storage here and could obtain good prices, say, in Halifax, freight rates would be almost prohibitive. I move that we pass a resolution protesting against this increase.

These things are happening more or less all the time and it is going to cause trouble. The growers in the United States have just had to fight an advance on the icing of cars—just the reverse of this; and unless we show some strength we will never gain anything.

Mr. HELLERMAN seconded the motion, which was passed unanimously.

J. J. DAVIS: Ever since I have known Mr. MacLennan I have never known one that was more willing and ready to give practical help than he has been. He is doing good work and I think that he is getting his work on a basis where it is really a practical help to growers. He gets around and works among the growers themselves, but the influence of his work is much wider. If he has done a good piece of work on a man's place in one district, the neighbors get to know about it and this helps the work along. It gives growers confidence in him. The interest of every man engaged in the growing of vegetables lies along the line of hearty co-operation with Mr. MacLennan.

MR. GIBSON: I appreciated Mr. MacLennan's address, especially his remarks on insects. The Department of Agriculture have been carrying on an investigation of insects for some years, and this afternoon I hope to present a description of some of them. I would like Mr. MacLennan to give me an estimate of how much it would cost to treat an acre of cabbage for root maggot?

A. H. MACLENNAN: About $1.25 per acre. It does not take much. You mix corrosive sublimate not in a metal but in a wooden tub at the rate of 1 oz.

to 10 gals. of water. You put this in a watering-can and pour it straight down on the plant. You have to get it the fourth day after planting.

Mr. Gibson: Might plants be attacked in the beds?

A. H. MacLennan: Not in the early stages, but in the later the only thing to do is to cover them with cheesecloth. I have 25 or 30 thousand under cheesecloth.

J. J. Reeves: It cost us for the last four years, if I remember rightly, $6 per acre, exclusive of material.

COMBINATION OF VEGETABLE AND FRUIT GROWING ON MARKET GARDENS.

F. G. Fuller, London.

The subject which I have here is not a new one by any means. It is one which all of us have had to take up some time or other. All who are growers are interested and engaged in the business, and not only as growers but in our Conventions at different times this question has come up and has been discussed at great length and I think, with much profit. While that is the case, and it is an old subject, still I believe that it is a very large, vital, and important one at the present time. During this time of reconstruction and the changing conditions after the war when our men have come back from the front, a great many of them have been receiving a training—a short course along different lines of agriculture—some in floriculture, apiculture, the growing of fruits, dairying, and in different lines. These men are going to be provided with money in order to make a start and it appears to me that at this time my subject is a very vital question for them. When a man starts out in the growing of any crop, if he intends to make it his life work it is just as important and essential that his course should be mapped out as if he were starting a factory. Unfortunately, a great many of us who are market gardeners now, or fruit growers, did not start that way. For myself, and a great many others I know who started in the business quite a number of years ago, when it was hard to find any occupation or work that was very profitable—we found ourselves situated upon a small piece of land, and because we did not know of anything better to do we started in that occupation and we gradually worked up, with the result that we had a great many knocks as we went along. I believe that at the present time men do not have to start so much under those conditions. At that time, also, a man did not get much assistance from those around him. A man seemed to think that if he knew anything particular about his business, it was a part of himself and he could not afford to impart it to others; he held on to it. Men do not think that way now; they recognize that it is to the common interest to give each other the benefit of their experience.

I believe that at this particular time this is a very vital question, not only for the man who is beginning, but also for the one who is already in the business. Conditions have changed in the past few years and it might be possible for us to revise some of our methods and make a change. If we are going to start in the business growing small fruits and vegetables as a mixed crop, many think you should specialize and others advocate mixed crops. They argue in favor of the latter that you might have a failure in some lines, but you are pretty sure of having success in at least one crop each year and will be assured a fair profit. In the first place we have to consider the conditions under which we are going to start. In a great many cases a man has his property and has to take conditions as he finds them. In other cases, where a man is starting out with some capital he can make arrangements beforehand, and the man that can do that has a great advantage. Now, if a man had only five acres of land or so to start on it would be a mistake to grow small fruits and vegetables as a first crop. In the growing of small fruits, such as strawberries—one of the best paying crops—we must have enough land so that we can have a rotation. It takes considerable space to grow strawberries, and, if you have a good crop one year, I do not think it wise to take another crop off the land for some time.

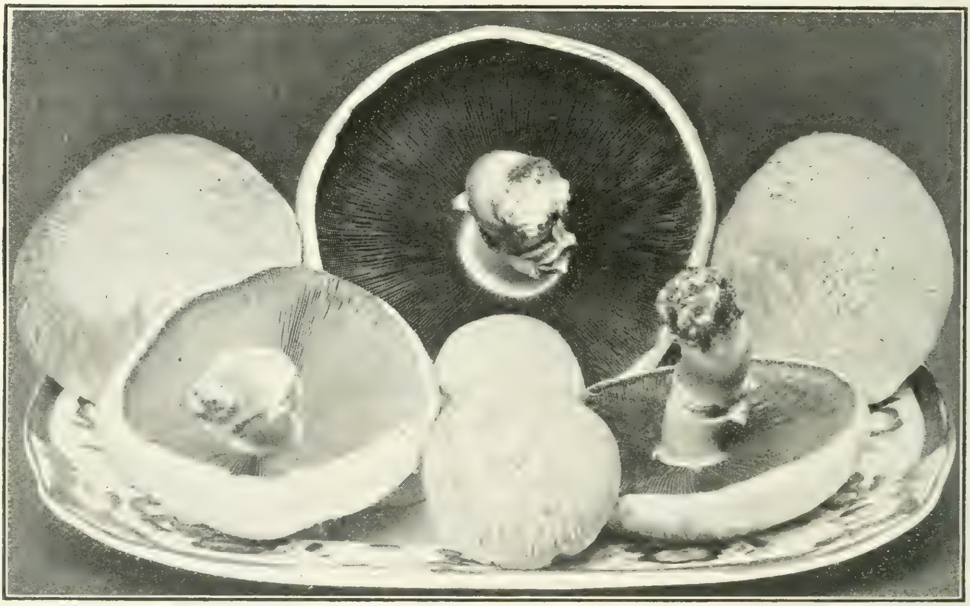
Now, a man with five acres should go into intensive vegetable growing and by careful selection of crops and proper cultivation he could make a good deal of money; as he could grow two or three crops off a good deal of that land during the season.

Another thing that would have to be taken into consideration would be the question of labor. That is one of the very vital questions at the present time. In every occupation at the present time there is more or less difficulty along that line, but I believe that along our line and the farming line there is more trouble than in any other in procuring help, and I believe that it is a great deal our own fault. You hear of men wanting to hire a man for six or seven months. He is willing to pay good wages for that time, but what is the man going to do for the rest of the year? At the present time, with prices so high, a man must have work all the year round in order to make a livelihood. This is one of the things we should take into consideration when we decide whether we will go into a combination crop. We could arrange to combine crops so that we would have something on the market almost all the year round, and in that way we would require help all the time. In rural districts we would have to provide a home for the hired man: and if he is a married man with small children in the family, fresh milk and other things would have to be provided. We cannot depend upon single men for help, as at the present time there are so many attractive and good jobs in the cities that we cannot expect a single man to stay on a farm for the wages which we are able to offer. A young man who is living with his father on his farm would, of course, be wise to stay there and take an interest in the business, but there is not so much inducement for a hired man working for wages.

A man who has a number of greenhouses would make a great mistake if he branched out into other lines, because during the first few months of the year—or the first few months of the summer, rather—just when the small fruit crop is ripe is the time when the greenhouses need the most attention. During the months probably of May, June and July, if we are growing a cucumber and tomato crop, our greenhouses need a great deal of daily attention, and we all know that is the time when the strawberry crop is ready. If we have to take our regular help away from our greenhouses and other necessary work that is on hand all the time in order to pick the berries, it will be impossible to look after those crops properly, and therefore we are going to fall down on account of having too many irons in the fire. If we could get pickers so that we need not take our regular help away from their work it would be all right.

I am not going to say whether I am in favor of the combination crop; I shall leave that to you to decide. I am just trying to bring out some of the points that it would be well to discuss. There is another condition to enter into: that is, the market for our goods. There has been a great deal said about prices of products at the present time and also the difficulty of marketing our stuff. As far as I can see the marketing is only a secondary matter. Production is the thing at the present time. There is no trouble in getting a good price, and if we can produce the stuff we are sure to dispose of it. I differ with Mr. MacLennan with regard to a good many things he said, but perhaps our conditions at London are different from those in other places.

If you will pardon a personal reference I would like to give you a little of our experience in the business. We started a few years ago in a very small way. We found ourselves located on a small farm of five acres of land. In the summer we had a small garden, but in the winter we had to find other occupations. We gradually increased our holdings and then we started to grow small fruits as well as vegetables. We got to be quite large growers of strawberries and raspberries, but we found that by doing so we were neglecting the vegetables and that we were not having the success with our vegetables that we should have. Also, we found it difficult to procure satisfactory help; we could not employ men all the year round, and so we had to take new men each year as we could not depend upon getting the same help each season. So we decided that it would be best to go into something that would provide occupation for the winter as well and so we would be sure of having regular help. We wondered if it would be wise to go into the greenhouse business, and finally we started into it in a small way. We ran the greenhouses and grew small fruits besides, with the result that during two or three months of the busy season the greenhouses had to be neglected. With the problem of picking and the prices that were received at that time for fruit we found that we were putting too much time into the fruit



Mushrooms.

for what we were getting out of it. So we dropped the fruit and gave more attention to the vegetables. We are still growing some small fruits, such as plums and cherries, but very few strawberries and raspberries. At the present time we are in a better position to employ help than ever before, and we do not need to send them away during the winter months but keep them busy all the year round. I am satisfied that under favorable conditions a man could go into the two lines and make a success, but we want to realize our opportunities before we do so.

J. J. DAVIS: Before you went into the greenhouse business had you been growing some berries?

F. G. FULLER: That was a point I was going to touch on. If we had not been in the greenhouse business the berry business would have been all right, but we could not handle the two crops.

Another thing that has to be considered is the soil. If you have soil that is more suitable for fruit growing than vegetables on some part of your land, it is well to use it that way.

As we are situated in London we have a good market; we can grow our crop and have no trouble in marketing it with very little expense at the present time. We have to do very little shipping, except greenhouse lettuce during the winter months. So under these conditions it may be all right to go into combined lines.

GRADING POTATOES AND ONIONS.

J. LOCKIE WILSON: Before we proceed to the discussion of Mr. Fuller's address, I wish to announce that Mr. Grindley, of the Fruit Commissioner's Branch, Department of Agriculture, has met the committee composed of Messrs. Eborall, Poad, Broughton and myself, and we have discussed the question of the grading of potatoes and onions.

Moved by G. H. POAD, and seconded by J. LOCKIE WILSON: That the following be recommended by this Association as representing the Potato and Onion Growers of Ontario at the conference to be held at the Chateau Laurier Ottawa, February 24th and 25th, 1920:—

Potatoes—HY. BROUGHTON, Sarnia; J. F. MCNAUGHTON, Orangeville.

Onions—J. G. FLEMING, Blenheim.

Carried unanimously.

J. J. DAVIS: I have found in travelling along the journey of life that there is no teacher quite as good as experience. Perhaps our own experience is the best—possibly we only think it is; but I know that oftentimes other people's experience is good too, and there is something wrong with a man who does not profit by the experience of others. In connection with this matter of combining fruits and vegetables, I think that in some instances they could be combined profitably, and not in others. I live in the same district as Mr. Fuller, about a mile away on the same road, and I think perhaps our experience is the same. We both had some little repute as strawberry growers, but we both have changed our line and gone into vegetable growing. There is not much likelihood that either Mr. Fuller or myself would go back to small fruits now that we have greenhouses; but I believe a good deal in the conditions of the market and if I had not greenhouses I might still be growing small fruits, as they are quite profitable. A good many of the returned men are favoring small fruits more than vegetable growing, but I do not think that if you were to ask them the reason for it, they themselves could tell you why. Unless they are content to profit by other people's experience, they are liable to make very many mistakes. At the present time, with the price of strawberries and raspberries so good, there is a very good opportunity for people to go into growing them, but there is an element of risk about small fruits that does not apply to vegetable growing. For instance, a frost about the end of May or the first of June may completely destroy a strawberry crop, but would not seriously injure vegetables. This element of risk is a very important one.

F. F. REEVES: I would like to ask Mr. Fuller a question as one who has had experience of small fruits. This last year two of my sons have come back from the front and I have bought a fifty acre fruit and crop farm. There are about two acres of strawberries, two of raspberries, two and a half of old orchard and ten acres of an apple orchard just coming into bearing. Would he advise us, as one who has had experience—we are in a favorable position as far as markets are concerned and we can procure pickers without encroaching on our regular help—to continue two or three acres of strawberries and two or three of raspberries, or to go into the work we know more about?

F. G. FULLER: In answer to Mr. Reeves, I would say that I think even if he does not know much about small fruits it would not take him long to learn. He states that he has about ten acres of an apple orchard. I should say that that would be a detriment. My experience of growing apples near a city is that it is not a profitable business. You could make more money off one acre of many other things than you could off the whole ten acres of apple orchard. Strawberries are one of the very best paying crops you could get. One thing is if you handle them for about three weeks you get your crop disposed of and get your money, and are not rushed for a longer time. If you are combining crops, you have to be careful that you will not have too many crops coming along at the same time. If you do you will have trouble in getting help to handle them, and also may crowd the market. If you could arrange a rotation of crops so that you would not have too many coming at one time you would probably find mixed crops very profitable.

G. HELLERMAN: Mr. Charles Harrison, Waterford, could answer the questions that have been asked to-day from an experienced standpoint. Are those two acres of strawberries Mr. Reeves has in good condition? The strawberry crop at the present time I believe is a paying one. I paid one grower last season for one hundred 32-box crates hauled in on his wagon, a cheque for $165. He would not clear all of that, but he cleared a large percentage of it.

MR. FURMINGER: You will find to-day that you are paying more for apples than for oranges, and they are harder to get. You will find in the Niagara District now that a good many of the growers are planting apples where a few years ago they were cutting them out. I would advise Mr. Reeves to keep his apple orchard. I am putting in more apples myself, and I do not think that there are any fruits that will pay better. If they are good varieties you will find them make good returns. With regard to the small fruits, I may say that practically all the vegetable growers in our section have strawberry and raspberry patches as well.

GORDON FRY: I would like to ask if any of you strawberry growers have had any experience with chickweed in growing the berries? Almost all the farms in our district have been bothered with it. We cut it down and have plowed the land, but as soon as you start to cultivate the chickweed starts up and you cannot keep it down. In a few years the crop is choked out, and it is too expensive to clean the chickweed out. Where you have a large place you can grow grain or hay instead of berries for a few years and you won't have chickweed, but when you go back to cultivating it the chickweed starts again.

W. J. COOKE: I have had some experience with strawberries and chickweed, and so far as I know there is only one way to overcome the difficulty. That is to rotate with some other crop, cabbages for instance. Grow berries one year, cabbages the next, and then berries again.

MR. WHITELOW: In his address Mr. Fuller said that the farmer or gardener had not done justice to the laborer in asking him to work five or six months and then turning him off in the fall. The question I want to ask is: can any gardener who has not greenhouses afford to keep help the year round?

F. G. FULLER: Yes, it would be possible to keep labor the year round, providing you grow crops that you can market in the winter time, such as late cabbage, celery, and other roots. I do not know, though, whether there is much money in growing parsnips, carrots and turnips. A great deal of our preparation for the spring work should be done during the winter so that everything will be in readiness to commence work when the spring opens up. If we do not keep our help all the year, we cannot depend upon getting the same men the next season, but have to take new and possibly inexperienced men, and that is, I think, a drawback.

F. F. REEVES: In the section I come from we grow a tomato crop on the land that we intend to use for strawberries the next season.

J. G. FLEMING: With regard to growing strawberries, I want to impress on every man's mind here that the most important thing is the mulch. If you mulch with manure you are in danger. If you mulch with anything that has a seed in it you are in danger. We use marsh grass if possible, and if we cannot obtain that, corn fodder, cutting it into lengths of about three inches. When the plants begin to show we do not take it away, but push it to one side, and when the berries begin to form they rest on a bed of the mulch, which keeps them clean. And if you wish to grow berries for commercial purposes you must have them that way. One of my neighbors had an acre and a half in berries and he sold the crop for $800 this year.

G. H. POAD: There is a method of mulching that I heard about that I would like to have an opinion on. A grower said that he mulched his berries by sowing oats in September and they grew with the berries in the spring and acted as a mulch and also protected the berries from being touched by frost. What is your opinion of that?

J. G. FLEMING: I am afraid the oats might smother the berries if they grew together.

G. HELLERMAN: I have found rye straw good for mulching.

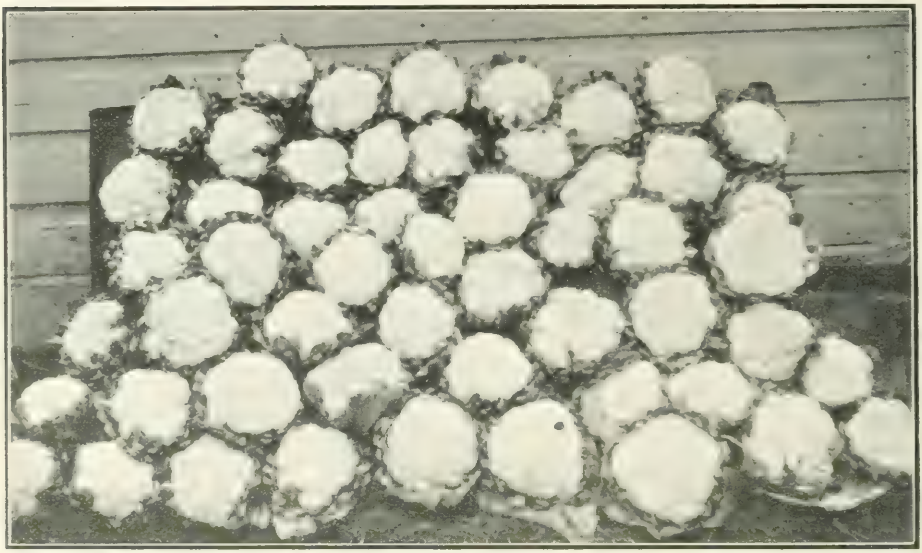
J. J. DAVIS: I am not satisfied to let the apple question remain as it is. I started an apple orchard some years ago and it is the worst thing I ever did from a business point of view. I am willing to admit that there are many hundreds of acres in Ontario where a man can grow apples very profitably, but to take a small holding near the city and plant apples is, in my opinion, the greatest mistake a man could make. I would like to go on record in this matter, as there are a lot of returned men going into fruit growing and they might not realize this. I have a small orchard which I planted some years ago, which has been trained up and tended pretty much like my children, and I hate to cut it down, but from a business point of view it would be the best thing I could do. It takes up too much ground and does not yield enough to pay for the value of the land. Further away from the city, I have no doubt I could make money by planting an orchard, but, under the circumstances, as I am situated it would be better to leave the apples alone.

J. **Lockie Wilson**: What is a fair average yield from an acre of strawberries?

G. **Hellerman**: I figure on getting 3,000 boxes of strawberries to the acre. Taking the price as it is going to run this year as twenty cents, that would be worth $600.

J. **Lockie Wilson**: Now, what return would you get from an acre of bearing orchard?

G. **Hellerman**: An average orchard of five acres would be worth $500.



"Snowball Cauliflowers."

J. **Lockie Wilson**: Then from a business point of view the strawberries would be worth much more than the apples.

W. J. **Cooke**: But you have to consider the difference in the value of the land.

F. G. **Fuller**: I think we have missed one point. That is, that after your orchard starts to bear, you get a crop of apples every year, but you can only count on one strawberry crop in two years.

W. S. **Eborall**: When Mr. Reeves asked that question it resolved itself into this: Mr. Reeves has got fifty acres of land; it is a question of using that land to best advantage. I should say that if he has a nice apple orchard, he should keep it—if he intends to take care of it. With Mr. Davis or Mr. Fuller it would be a mistake to put in an orchard, but as Mr. Reeves already has one I think it would give better returns if properly cared for, than to cut it down and use the land for other crops.

The question of strawberry growing is mainly whether you are willing to take all kinds of risk—frost, unfavorable weather—and to give the care that is needed. I have never found it necessary to cover my strawberries.

W. J. **COOKE**: But you are in the Niagara district.

W. S. **EBORALL**: When you come to take care of about two or three acres of strawberries, do you know what you are up against? You have to get extra help, and you have to have buildings to accommodate them. Then, as Mr. Fuller says, the strawberry season is so short and when the crop is ready for market you have to take your help off your other work to pick the berries. Then you take a man and your team—and a team should be going on a farm all the time—to carry them to market. And as soon as the strawberries are done the raspberries come on. Your other crops need cultivating all this time. And that is where many of the returned soldiers fall down—they have not enough money to carry them through until the returns begin to come in and they try to do other work to make ready money while the first crop is growing. That means that the place is neglected and the crop goes to ruin. A man needs capital to tide him over the first year until he sells his crop. If he is able to get over that year all right, then he can expect to succeed. It is a good idea to grow some early crop, like asparagus, lettuce, radishes, which you can sell and get a little ready money for before the strawberries, raspberries, cherries, tomatoes, etc., are ready.

RAILWAY TRANSPORTATION.

G. E. MacIntosh, Ottawa.

While I have been associated for the past ten years, more or less, with the Fruit Growers of Ontario, I have never before had the privilege of meeting the Vegetable Growers. I feel, however, that the vegetable industry and the fruit industry and the railways of this growing country of ours are interdependent and on every occasion on which it has been necessary for me to appear before the Board of Railway Commissioners I have incorporated the interests of the vegetable growers with the fruit growers.

I think you would be interested in hearing about what took place at the recent meeting of the Board of Railway Commissioners. This was a hearing before the Board of Railway Commissioners on an application by the railways for an increase in the freight rate on heated refrigerator cars from one cent to one and one-half cents per mile. That does not seem much of an increase, although it is 50 per cent., but these little things count up. For instance, some time ago the railways applied for an increase of 50 cents per ton on ice in freight cars. That seemed like a small matter, but when it was counted up it was discovered that an increase of 50 cents per ton would mean $32,000 a year. The decision in that matter was that they were not permitted to increase their charge. The evidence in that matter brought out many interesting points. It showed, for example, that ice for the passenger service was charged to freight service; also that some of the icing companies had interests in the railway companies, etc. This shows that these apparently small matters require attention.

This case that is before the Railway Commission came up on the 17th of last month. I felt when I got notice of the hearing that sufficient time had not been given the Fruit and Vegetable Associations to consider the matter and I asked that the hearing be delayed, but this request was turned down and the case went on. In a communication I had from Mr. MacLennan, he told me that you wanted to discuss the matter here. I asked the Board to withhold their final decision until you had an opportunity to consider the matter here to-day.

The increase under present conditions might be said to be reasonable when you consider the tremendous increase in the cost of living. But the railway companies when they charge for heated refrigerator car service are selling to you, we may say, a certain article at a certain price. Now, from what little evidence I was able to get I do not think that this service is being given. We were able to show in one instance where two cars of apples and two cars of potatoes started out from the same point. One arrived frozen and the other roasted! Now, if the railway companies intend to sell this service to the public they should certainly give you the service they pretend to be selling.

We asked on behalf of the Vegetable Growers and the Fruit Growers and other interests that the railways should be obliged to provide a carriers' protective service at a reasonable cost, and we felt that the consumers would be willing to pay for that service, and that it should be definitely stated in the tariff; then it would not be left to the shippers to make claims and we would not be left to the mercy of the railway companies regarding the condition of shipments of fruit and vegetables that would be coming into our markets.

The Chairman of the Commission intimated that he thought that it was sound argument and personally he said that he believed that the railways should be obliged to do that. As it is to-day, you pay for service, but you have no redress whatever except for ostensible neglect on the part of the carrier and you have great difficulty in proving that. Now, the American service has a system of protection by which you can ship, say from the State of Washington into Alberta. You pay about $18 and that $18 gives you a guarantee against frost or overheating. And there is no trouble about it. If the car does not reach its destination in good condition the company assumes liability without further question. I do not think there is any man in Canada who would object to paying for a service of that kind. Now that service is operated right into Canada from the States, and I claim that it is discrimination to refuse to extend it to shippers in Canada. While the Commissioners seemed favorable to this, the Chairman intimated that he was doubtful whether they could issue an order requiring the railway companies to inaugurate this service. He further intimated, however, that if application was made it would have consideration from the Board.

Now, I have intimated to the fruit people from the Pacific to the Atlantic that they should pass a resolution making a recommendation to the Chairman of the Board of Railway Commissioners that an order be made for an extension of the carriers' protective service. While our organization is under the Fruit Branch we would like to do anything possible for the Vegetable Growers as well, to assist in obtaining proper tariffs, arrange for proper rulings under the tariff and for proper routing of shipments on the part of the railway companies so as to get the goods on the market with the least possible delay.

It was then moved by J. J. DAVIS, seconded by HY. BROUGHTON: "That whereas the present heated refrigerator car service as now provided by the Canadian railways has not been satisfactory in the handling of different varieties of vegetables, particularly onions and potatoes, causing heavy losses and waste of foodstuffs, due to the fact that heaters have not received proper attention in transit, the Ontario Vegetable Growers' Association, in session in Ottawa, January 15, 1920, go on record as being opposed to any further increases in the charges for a heated refrigerator car service under rules and conditions now effective;

"Further, that this Association strongly recommends that application be made to the Board of Railway Commissioners for an Order requiring the railways to provide a carriers' protective service under which the railways assume liability for loss due to freezing or from artificial overheating not the direct result of negligence of the shipper, and that the railways be permitted to impose a reasonable charge for this service in addition to the regular freight charges:

"Further, that a copy of this resolution be filed with the Board of Railway Commissioners."

Carried unanimously.

CO-OPERATIVE MARKETING.

F. C. Hart, Toronto.

Perhaps there is no product of the farm which shows so little progress in the system of marketing, in which there has been so little study and investigation, where there are so few classes of middlemen, and, if the truth were known, where there is so expensive a system as that connected with the marketing of vegetables. This is rather a strong statement, but a little reflection will show that it is altogether too true. For the milk producers, grain growers, live stock producers, there is some machinery of trade which largely relieves the growers from the details of marketing and allows for a broad application of the law of supply and demand. Resulting from conditions more or less evident, the vegetable growers, however, have persisted in doing their own marketing. By selling on the municipal market, by peddling to retail stores, and from door to door to the individual consumer, and at a cost unknown to himself, the vegetable grower has largely prevented the growth of a machinery of trade outside of himself, and so there remains the old incompetent system which compels a grower to leave his farm at a time when it is essential that his attention should be concentrated on his growing crops, a system which compels him to depend almost entirely on hired help either to take care of his crop or to market the produce. With conditions of labor as at present, either way cuts deeply into the profits and makes vegetable growing one of our most uncertain industries.

When towns were small and the grower was nearer his market, when the volume of trade was not large, when the cost of production was much less, and labor was more easily and cheaply available, the evils of this lack of a marketing system were not so evident; but when, as under present conditions, the grower must leave his farm at a critical time to inefficient help or trust his marketing to such help, he realizes a little more accurately what it is costing him to divide his energies and his time between two operations, both requiring expert management. As is well known, it is difficult, or almost impossible to find an expert grower who is also an expert marketer of his produce. It is perhaps not necessary to enlarge upon the loss of returns to the grower through this lack of efficient market machinery. You will remember some time ago, during the war, it developed that near the City of Toronto there were some 6,000 bushels of carrots on the growers' hands and the machinery of trade could not, or did not, place these upon the market. It was only the extraordinary act of the Food Board which at that time prevented an almost total loss to the growers of this supply of vegetables.

No doubt each of you can recall experiences of your own of a more or less similar nature where you found it necessary to practically give away or plow down the results of your season's labor on some crop, because your own individual market was over-supplied and there seemed to be no easy method of transferring your supply where it was needed.

The variations in the prices of vegetables on the Saturday markets over Ontario is another indication of the need of better marketing machinery. Variations in price as high as $2.50 for a bag of potatoes on the one Saturday, at points only forty miles apart, and instances of a similar nature, are entirely too common. Compare this with (under normal conditions) variations of a fraction of a cent per bushel for wheat from hour to hour on the world's markets.

It is not my intention to enlarge upon the evil results of this lack of market machinery, as you practical growers will have had experience much more graphic than I can portray.

This is an age of specialization, and we view with admiration the industrial plant highly specialized, where the product passes through many hands and at a cost much less than under the old system; while we hold up our hands in holy horror at the introduction of middlemen into the system of marketing vegetables and cry "direct from producer to consumer." One moment of reflection, however, will show that in all lines of trade the introduction of a specialized class of middleman may, and usually does, result in lessening the cost of marketing. We are apt to forget that the main thing is not cutting out or doing without middlemen but lessening the cost of marketing and doing it more efficiently.

I call to mind a situation near Toronto where a considerable number of vegetable growers are situated to the west of the city. These growers load their produce on their waggons and drive towards Toronto. On the way they are met by hucksters who drive out of the city to buy produce. If vegetables are scarce the hucksters start early and meet the growers nearer their farms; if vegetables are plentiful, however, the grower may have to drive not only to Sunnyside, but into the city, and peddle from store to store, and the further he drives the cheaper he is willing to dispose of his produce. Here is a situation where the nearer the market the cheaper the goods are sold. Suppose that fifty of these growers, in place of hiring themselves (fifty valuable producers and largely ignorant of market conditions) formed an organization and hired one expert market man with the necessary assistance and established a market centre where all their produce could be delivered, graded and disposed of by the expert, who would be in a better position to know the conditions of the market than would the fifty individuals. He would also be in a position to take care of any surplus and to either store or transfer to suitable markets. I do not go into details, but merely submit that if the industry can support fifty separate growers to market their produce it ought easily to be recognized that economy would result if it were concentrated in fewer and more efficient hands, to say nothing of the gain to be made by allowing the grower to concentrate on his production. Is there any reason why the growers around Ottawa, Kingston, London, Brantford, and other centres could not follow such a plan to the ultimate benefit of both producer and consumer? This is not the time to enter into details of any such plan, but my plea is for an efficient middleman in this important industry, a middleman hired by, and under the control of the growers.

It must be recognized, of course, that there are difficulties: the individuality of the growers, competition of growers who are willing to work for nothing, the inexperience of the growers in handling such a business concern, and other points readily recognized by the practical growers. Perhaps the greatest difficulty, however, is the lack of grading and the difficulty of paying growers for their produce on the quality basis, but even this greatest difficulty is not insuperable. There is no reason why such a local association as suggested should not establish its own system of grading and buy and sell on such basis. Any inequalities that might appear would be minor in comparison with the variation in prices now received among growers and its influence on the quality of production is of no small consideration.

The general lack of a marketing system as applied to vegetable growers leaves the field comparatively open to co-operative marketing, the only system which gives permanent satisfaction to the growers and justice to the consumer. This system is being quickly applied in the market of farm products generally all over the continent and it appears to me that the vegetable growers in Ontario should not defer embracing the opportunity, which is now theirs, of introducing the co-operative system into their marketing. This means definite action on your part, and by that I mean you individually. Gather together the commercial growers in your neighbourhood and thoroughly canvass the situation and determine whether or not the co-operative system would better the conditions under which you are now marketing.

An excellent crop of Carrots.

One other point: there is something after all in this phrase, "direct from producer to consumer," and I believe the producers generally should encourage and endeavour to deal with co-operative purchasing organizations among consumers. This is not the time to enlarge on the wonderful achievement of consumers' associations in other lands. One of these has purchased land in Canada upon which to produce wheat for its mills; it grows tea in India, tropical products in Africa, and farms land in England. In my estimation, however, it is unnecessary for a consumers' association to enter the field of production and it is unnecessary for a producers' association to enter the field of distribution. There is no reason, however, why a producers' organization and a consumers' organization, each performing the functions of middlemen at its own end, should not come together and deal direct one with the other.

The problems of the vegetable growers to-day are not so much in the field of production but in that of marketing, and I respectfully submit that a solution of this problem, as in other commodities, lies through co-operative marketing.

J. Lockie Wilson: This is one of the most illuminating addresses we have ever heard on co-operative marketing. There is no man in Canada who could give a more comprehensive address on this subject than Mr. Hart, and, if you wish to form a co-operative association, he is at your disposal and ready to assist in any way possible.

J. G. Fleming: I am very much pleased with our Convention this year, but even if there were no other attractions I should still think it worth while to have come to Ottawa to hear Mr. Hart speak on this subject alone. I had the pleasure on another occasion of being one of an audience of four, I think, to hear Mr. Hart speak on this subject. I told Mr. Hart then that I hoped I should have an opportunity of hearing him speak again and to a larger audience. Our members were much interested as they are at present trying to operate a co-operative system in our district, and we hope to have it going in the very near future. We have come to realize at this time that in our work there is none of us who has time to market his own goods and give his crops proper attention at the same time. I have been doing a good deal of my own marketing in the last few years, and each time that I have had to leave the farm to take my stuff in to market, I have had to leave a hired man in charge, and I think that by not being able to attend to my crops at that time, I probably lost as much as I made. I have come to the conclusion that we must have some better way of marketing our goods. Now in the first place I will treat this question from just one angle,—with regard to the onion crop, which, as you know, is a most important one in our district. You know that the onion has got to be distributed all over the country. If we had only one market we would soon flood it. I will give one example of what I mean. Two years ago this fall we were getting along nicely disposing of our crop, when the bulk of it was being shipped to Toronto. A few of us were shipping to other places, such as Montreal, Halifax, Ottawa, but the bulk of it was going to Toronto, —when an embargo was placed by the railways and all of it had to go to Toronto. The result was that a large amount of our crop could not be disposed of. If we had a co-operative association we could direct our produce to wherever it is needed. We could keep advised as to the situation in different parts and distribute our various crops so that no place would be overloaded, yet every place would get its share. For instance, supposing Toronto looks good for a large shipment. Several producers have large shipments on hand and they all send them into Toronto. The broker there sees his opportunity, and the result is that we have to take a lower price than we would if the supply were normal.

Last year the tomato growers at Leamington handled practically all the tomatoes in that district. I never saw a crop handled more nicely in my life. The price ran uniform all over the country. You could buy as cheaply in Ottawa as in Toronto, and as cheaply in Halifax or Montreal as anywhere else. The reason was that they had the supply for each place gauged beforehand and so kept the price uniform.

I think the best example of co-operative marketing I know of is the California Fruit Growers' Association. They know the probable demand in each district and distribute their goods accordingly. They tell you how many cases you can have each week and that is all you get.

If we have a co-operative association and put a competent man in charge we could produce a good deal more and get a better price than when we look after the marketing ourselves. I was looking over the report of the Leamington Co-operative Association the other day and saw that they handled 2,800 carloads alone. They handled 90 per cent. of the onion crop of the whole province. Some years ago there were seven or eight buyers in that district buying up onions at whatever price they could, but buying them early. Last season the Erie Co-operative Association bought their goods and handled them at less than 2½ per cent. cost. Now I do not think any man can handle his own goods cheaper than that.

If there is any man who wishes to start an association in his district whom I can help in any way, or if I can help Mr. Hart in any way, I am at his disposal.

W. R. Dewar, Leamington: Co-operative marketing is a subject which at this time requires vigilance and foresight on the part of our officials and leaders, and sympathetic understanding on the part of the growers. It may even be that some time the farmers' political movement will be supported and assured only by the success of their organized commercial movement, which in itself is now firmly established but must increase to a considerable extent to be as powerful as it should be.

The subject we are discussing is old—primarily it is organization, and as such is as old as history—but also in many ways it is as new and plasmic as the U.F.O.

It is my intention only to touch on a point or two of what appear to me as new phases of the subject.

First, many of the reasons given in the past to warrant organization for co-operative marketing, although still important, are not now so absolutely necessary; such for instance as being geographically side-tracked and at a distance from the main markets, or in having some special article of sale which would lend itself to successful co-operative marketing. These marked incentives or advantages were necessary a few years ago to overcome opposition from outside and doubt from inside. But now the advantages of co-operative marketing of farm produce have been so fully proven—such as the development of markets, wider distribution, improvement of grade and packs, obtaining a more comparative price for the rural producer—that these advantages are now accepted as axioms and the rural producer is beginning to assume that some sort of co-operative marketing is advantageous for any section or any crop. He is beginning to accept the situation just as the city producer in years recently past was wont to accept his trade organization as necessary to success. But the city producer is still a big step ahead in organization through central control of capital, which has enabled him to form very close and strong organizations that have gone even so far as to be classed as "in restraint of trade." This same cloud is now looming upon the horizon of the rural producer and forms a second new phase. Just as combinations of capital in industrial concerns fought each other for control, so various co-operative organizations are even now conflicting in districts under different leaderships. In each case the advantage and even necessity of organization or co-operation is proven by this organization into groups, but the human desire of battle is still present and these groups are now largely competing in the place of the individual. This development has been very noticeable throughout the United States during the last five years, and it may be the working out of a natural law which will develop the best methods and strongest leadership. Any tendency, however, to centralize the controlling power out of the hands of the rural producer and his local organization should be discouraged by our officials and must be strongly combatted by the rural producer himself. A large amount of faith and confidence must be placed in centrally elected and appointed officers and managers, but do not let the growers lose this power of control through a semblance of it, until the time comes when "the tail is wagging the dog." Such a state becomes very hard to change, and once entrenched it takes often a near-revolution to remedy.

Just another point. It used to be said that many young co-operatives were killed by poor management. Are we not in a position to say that such cannot be any more? For if we believe in the principle of co-operative marketing it is up to the producer to carry this blame himself and to make his co-operation successful in spite of poor management. There is always the remedy at hand of better and fully successful management. Have the organization right in the first place and the management will follow.

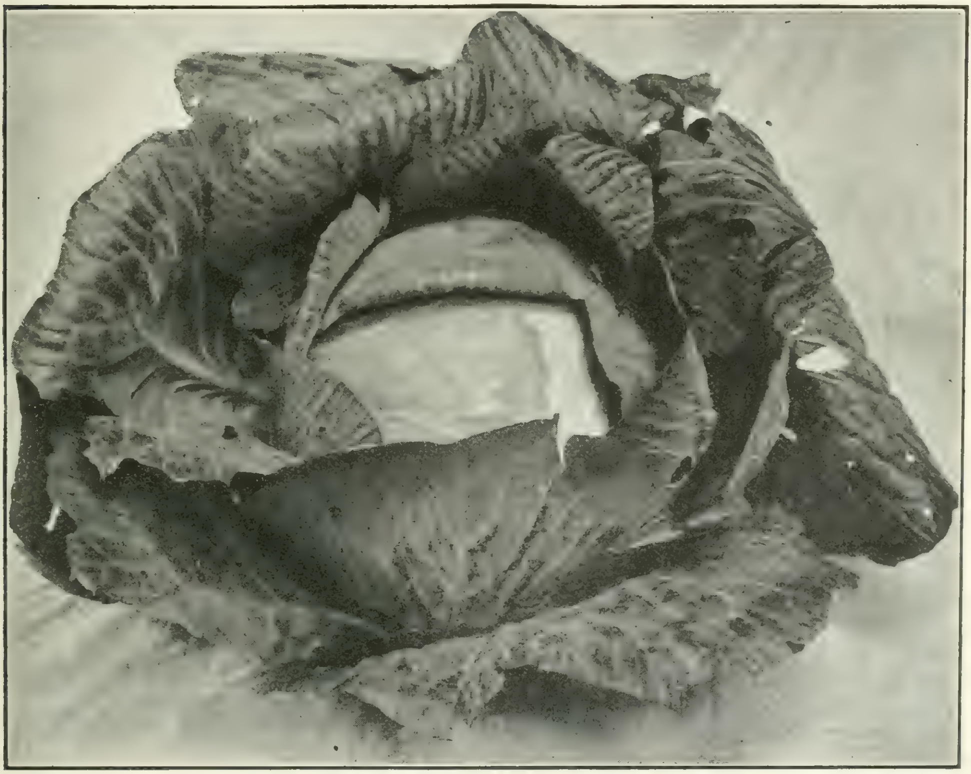
To conclude, there are now many successful co-operative marketing organizations in Ontario and many more in Canada. There are many points in common that such organizations can get together on—such as transportation—and my message to this convention would be—keep co-operative marketing in mind as a coming power, and also keep it in your own hands: think the subject over and expand.

J. J. Davis: Mr. Hart has told you practically everything there is to tell. However, there is a phase of the question that he did not touch on very much, nor Mr. Fleming either. As this marketing problem touches the general run of market gardeners very closely, I think it might be discussed from all points.

The system as applied by Mr. Fleming to his one special line of onions is very different from what we are up against. While we have made tremendous strides in the production of vegetables since I first started in the business, we have not changed our methods of marketing very much. When I began some years ago, each man drove up to the market in his own cart and marketed his own vegetables as best he might. He stood around all day in all kinds of weather waiting for customers, selling what he could and getting the best price he could for them. Or if he could not dispose of all his stuff he took it back and put it away to take back another day. We have not progressed very much since that time, and it is time we did. The conditions I am most familiar with are, of course, at London; and I do not know whether the same applies to Toronto, Brantford, Hamilton and other places. I wonder if we could not get on a better basis of selling. At the present time it costs us practically nothing by way of rent, because we do business in the old Fair pretty much, and therefore are at little expense that way, whereas if we go into co-operative marketing we would have to have buildings and salesmen, and it would cost something.

If, say, a dozen of the largest growers in every district would pool their stock and rent a place to do business in and pay a man that has got good business ability to sell it, I think the benefits would be so great that it would not be long before all the others who would not come in on the start would be asking to come in on the selling. As it is now, there are as many horses taken off the farms every market day and as many salesmen as there are gardeners. Some of them go to the different stores, and you see one man drive up to a store and sell perhaps two or three dollars worth of stuff; then another man comes along and sells a little more. The buyer has it down to a system, and he likes to buy a little from each one so that he can keep them all calling. It is good business for him, as that way he gets a good choice without the trouble of going to the market, but it is costing the growers too much—not so much in cash as in time, and, of course, time is money.

Another point is that there is not much use in a man growing a lot of good stuff and then falling down in selling it; and, of course, he has to look after the selling of it himself. It is now getting to be pretty hard to get very efficient help. What a man is going to do I do not know. It takes a man at the present time the best part of three days a week to market his produce. If he is fortunate in getting a fairly good man to work for him, who can handle the farm in his absence it is not so bad; but, at any rate, he has to attend to the marketing himself, as he cannot let a hired man sell the produce and handle the money. There are very few hired men who can run the business during his absence. We are losing there, and it seems to me that it is time that we at last make an endeavour to better conditions. The only way out that I can see is for growers to pool their stock, and, of course, they would have to put up some money to provide wages for a little while to pay a competent salesman, but I can see that the business would work



Glory of Enkhuisen.

out satisfactorily. Mr. Hart spoke about grading stock. I should think that would have to be done as the man is taking in the stuff. If one man is taking in a grade of stuff—celery for instance—that is worth 75c. a dozen, and another man takes in a grade worth 40c., each would have to get what it is worth. It would have to be run on an equitable basis, and the man in charge would have to know what the stuff is worth, what it would sell for, and this would have to be placed to the grower's credit. Of course, this system would mean quite an outlay at first; but there is a big outlay in marketing our produce at the present time. We do not realize the cost of the selling end of the business. If a man had plenty of help it would not be so bad, but if he cannot get plenty of help—and things seem to be getting worse and worse in that direction—a man would have to cast about for more efficient ways of selling. I remember a convention at Toronto when Mr. Selby, of Philadelphia, gave us a talk on this subject. He said that they had started in to sell for themselves. They had 160 acres of their own and they arranged to sell their own stuff. Pretty soon other growers were asking them to sell for them too, and it grew into a large commercial business. I do not see why we could not go into a commercial business. Just so long as there is a proper market we have to admit stuff from other places. We cannot keep it out; in fact I do not think we want to keep it out. The only way would be to grow enough stuff ourselves to keep it out. The only thing is many growers would think you were cutting your own throat by trying to sell someone else's stuff. But you are not. I can see that if the thing is worked out right, in a little while it would not be costing you anything to sell your own goods. Among the growers you will find here and there a man that is a pretty good salesman and can get along pretty well at it, but for one good salesman you will find fifteen or twenty who are absolutely rotten at it. And the poor salesmen are detrimental to the business. If you could co-operate and put the stuff into the hands of a good salesman you are eliminating these poor ones. Suppose that for the first year the cost were a little more than it is costing you now: I am convinced that after the thing got going right we would find it so satisfactory that we would wonder what in the world we were thinking about that we had not got on the job sooner.

J. Lockie Wilson: In the marketing season, did you say that it takes about an average of three days a week to dispose of your stuff?

J. J. Davis: It doesn't take all day, but the days are pretty well spoiled. You don't get home until three or four o'clock in the afternoon, and that means that the day is pretty well broken up.

J. Lockie Wilson: Counting a man's time at $5 per day, that would be $15 per week. And for the twelve growers you propose to form an association it would be $180 per week.

J. J. Davis: I can remember one day about twenty years ago. I was delivering some tomatoes late in the afternoon and suddenly the thing struck me as so irresistibly funny that I sat back in my rig and laughed. There was myself for one, Mr. Fuller's brother, I think, for another, and two or three others I could name. Here we were all doing the same thing, covering the same ground, and the whole business would not amount to more than two or three dollars.

Sometimes, people do not buy sufficient at one time. They seldom buy more than they need; they err rather on the side of buying too little. I have taken things home from the market, and before I got there someone would call up to know if I was going back in the afternoon. They expected me to make a trip to take in a little dab of stuff that they had refused to buy in the morning! If we had a man there and a place for our stuff, this difficulty would be got over. If they did not buy enough in the morning they could buy a little more in the afternoon; if they did not buy enough on Tuesday they could buy more on Wednesday instead of having to wait until Thursday. It means a loss of business on the days when the stuff is not available. Every time the consumer wants to spend a dollar there should be a reasonable opportunity for him to do so.

This is a question that should be taken up by each branch and thoroughly discussed to see if we cannot inaugurate a better system.

A MEMBER: Do you think a co-operative association would get things to the consumer quicker than the individual?

J. J. DAVIS: It would certainly give you a better chance. For instance, if you take stuff in now on Tuesday and you cannot sell it at all, you either have to throw it away or take it home and bring it back again on Thursday if it does not spoil in the meantime. If you had a place to leave it, it would be there for the grocery man or the individual consumer to get hold of if they want it before the next market day.

Another point is: we have three days a week on which the market is held. It does not matter what important work you may have to do on Tuesday, Thursday or Saturday, at home, if you want to dispose of your stuff—and there is no use in producing it if you don't sell it—you have to leave everything and go in to market. Under the co-operative system you could go to market any day from Monday to Saturday, as it is convenient for you. A man that is running a business cannot always leave it, but under the present system it is necessary for the grower to do his own marketing. Under the co-operative system, however, the hired man would be just as good a market man as the boss, as all he would have to do is to drive in with his stuff, put it off, and take a receipt for it. The grading is left in the hands of the salesman.

H. F. TOMPSON (Amherst, Mass.): It would perhaps be interesting to you to know that this is just the sort of thing we are doing in Providence. Providence is a city with a population of about 250,000. About twenty-five of us formed a co-operative selling association two or three years ago. I am a farmer before anything else, and I have been doing business with the Providence Farmers' Exchange since it was organized. We have a business sales force of six or eight and a sales manager. My produce has been taken to market every day this past summer by their trucks. The Exchange has shipped produce to Boston and Baltimore, Md., when it could not be disposed of to advantage at home. This has made it possible for the grower to stay at home on the job. My farm manager has not found it necessary to be at market a day, except by telephone. A daily talk with the manager has made possible an understanding of market and farm conditions, valuable both to the grower and selling agent.

We are starting our third year, and the scheme works. There are difficulties: this pooling question is one. I called up the manager one day lately and asked how things were going and he said, "Improving all the time." That pleased me greatly.

If there are any questions about this pooling, perhaps I could answer them and give some light as to how it has been worked out in Providence. One of the great problems is that of grading. We have little tags sent to our farms with the number and marked A, B, and C. The farm superintendent puts the tag on and sends the stuff in. If in the opinion of the sales manager it is not graded properly, he changes the tag and calls up the superintendent and tells him that he is not marking correctly. They have it out and settle it then and there.

We are trying to interest growers in the same plan for the Boston market. We had $150,000 worth of business pledged last year, but discouraged organization until at least $300,000 worth of business might be assured, because it is not best to start until support for the plan is strong enough to stand competition.

The State of Rhode Island through its Legislature passed a bill in 1916 standardizing the market produce package, adopting a box, inside dimensions 17½ x 17½ x 7 1-16. This is marked "Standard Bushel for Farm Produce." Practically all kinds of produce are handled in this package. The Providence Market Gardeners' Association accomplished this.

Thus progress has been made through our Association. Our Association bought and distributed all the new boxes and has improved the market package situation considerably. During the winter when Saturday does not interefere with the sale of produce, the Exchange is employed for purchasing supplies such as fertilizer, seed, etc.

Our expenses, of course, are much larger than they would be in a smaller centre. The Providence Farmers' Exchange is financed by the use of members' negotiable notes, which are deposited with a bank and used for collateral. These notes are made on the basis of a certain initial sum, say $25, and $15 for each acre in crops. For instance, if I grow fifteen acres of vegetables my note would be for $25 plus 15 times $15, or a total of $250. We simply underwrite the Exchange to that extent, with no actual expense to the members if the Exchange succeeds. If you have a responsible body of growers who get together and go to a banker in your centre, he will be glad to go half way.

J. LOCKIE WILSON: What is the cost for selling?

H. F. TOMPSON: We pay the exchange 10 per cent. That 10 per cent. is deducted from our cheques each week. Our returns are received each week and mailed on the Thursday following the week in which the sales were made. A credit or debit on packages is also made at this time.

Our Exchange has adopted a much more expensive package than we had before. The loss is very much less than on the cheaper package.

It has cost us about 10 per cent. to sell our goods. The volume of business has been about $250,000. With a greater increase in business the amount of overhead expense would be proportionately less and the cost of selling reduced.

J. LOCKIE WILSON: This is one of the most important questions that could come before this convention. I do not think that we have ever had a better convention than we are having here to-day. It has been suggested that we hand this matter of co-operation back to the branches to be discussed, but why should we not discuss it here? We have talked this thing over for ten or twelve years, and are we going to wait for another ten or twelve years before we do something about it? We should go ahead and discuss it here and now.

W. H. STEWART: I am only a young man, but there is nothing more interesting for me to hear than this discussion. Two or three years ago I thought the same as Mr. Davis. I looked around the market and saw a hundred men who had driven in and were waiting there for people to buy a few cents' worth, and I got the idea that we might get together and find a better plan of selling. Our men foolishly put me in as president, and I put it up to them. Then they put me out. I do not think they had any hard feelings, but they thought I was young, and was looking for new ideas. The next year after I was criticized I stayed quiet. The next year some of them came around and wanted me to do something. Last year we opened up a canning business where we thought we could dispose of our produce, but the organization at Leamington spoiled our scheme. Just when we were getting good prices for our tomatoes along came a few carloads and spoiled the whole thing.

We had just got the factory started nicely. I went around to different men and asked them to put in a ton each. I got about thirty tons promised, and on the strength of that the factory men got ready. We have 30,000 tins on our hands yet not filled. The prices kept up pretty well for the tomatoes at around $1 a basket, until three carloads came in one day. They were badly spoiled and we got about ten or fifteen cents a basket for them. We knew that the growers were getting probably nothing. It was disappointing at the end they started from as well as at our end. There were at least two carloads sent out to the city dump.

We need such a man as Mr. Hart to help us organize, and I am glad that I heard him to-day.

Squash and Pumpkins.

J. A. Farquharson: Perhaps the reason that Mr. Stewart was knocked down was that we had had a little of the co-operative business a few years ago in the Ottawa Branch, and some of the co-operative work got behind, with the result that some of us lost $100 or $200. That knocked us down a bit and we decided that perhaps we would do better to go along alone.

W. S. Eborall: I found in several places, particularly Dunnville and Waterford, that it was pretty difficult to speak to them on co-operation. Of course that may be because they had been unfortunate in their experiments in that line. We should have considerable time for this discussion, even if we have to let some other things stand, as it is a most important one. I would like everyone to speak on it.

J. G. Fleming: There were two points brought out that I would like to draw attention to; one by Mr. Tompson and Mr. Davis and one by Mr. Stewart. Mr. Davis and Mr. Tompson both took somewhat the same view as to handling other people's crops on a commission basis. I would like to cite the instance of Leamington. Two years ago we shipped four or five carloads of onions from Leamington to different places, and had to get a commission agent to handle them. Now if we had an association that could have handled those onions they would have got the commission. With regard to what Mr. Stewart said about sending tomatoes to Ottawa. If we had been advised of conditions we at Leamington would not have flooded their market at any time. That is the idea of co-operation; to send our goods where they are wanted, not where they would flood the markets. I have been reading about Mr. Tompson's scheme in Providence and other plans of the same kind in the *Country Gentleman*, and I think that their scheme is what we are trying to work out. They are disposing of their goods at a cost of 10 per cent., and do not have to leave their farms or take their horses off for a single day. I do not see why we could not do that also. We have to take our horses off the farm, leave our work, get our own packages, etc., which means a great loss of time from the work of production.

Co-operation, however, is broad, and no narrow-minded person can belong to a co-operative association and derive its benefits fully. We will have to broaden out, but when we have broadened our ideas we should be able to form co-operative associations that would help us to get the very best returns for our work.

Leamington is one of the very best examples we have to-day in the co-operative production line, and last year they paid their shareholders a dividend. The cost of marketing all our goods in Leamington was 2.8 per cent. I do not see why the same thing could not be done in other places, and I am sure that the Leamington Association would be prepared to deal with other co-operative associations and keep in touch so that shipments would only be sent as required, and there would be no danger of any one market being flooded.

HY. BROUGHTON: I was the originator of the co-operative movement in Lambton County some fifteen years ago. Two years after I started the movement the middlemen tried to take the business away from us, but, to make a long story short, they did not succeed and have not succeeded yet. I am a producer but I found out that growing is only one side of the business; it is quite another thing to be able to dispose of your produce profitably. I have been under the necessity, having no boys of my own, of running my place alone, but I have managed to look after the Association as well. Sometimes we have had as high as one hundred members, although at present we are down to sixty. But we are making a success of it. We have a city of 100,000, and we have in the vicinity about two hundred growers. You can understand, if those two hundred growers were to put all their stuff into that town, what the result would be. Necessity was the mother of invention, and I cast about for some means to relieve the situation. We had natural markets in Sault Ste. Marie, Port Arthur, Fort William, Winnipeg, and to come east, London, Brantford, Toronto, Stratford, Guelph, Ottawa and other places, wherever we wanted to go. Possibly it would be rather a long story for me to go into details, but I would merely intimate to the growers here to-day that we do only a wholesale business, a carload business. We have only done that from the first. Some of our growers thought when we started that we should go into the retail business in our own town, because it was not large enough for wholesale trade.

One of the main things we insisted upon was that only produce of the first quality was to be shipped out of our county. Now, that was uphill work, and I think always will be until we can get somebody—the Government would be best—to grade our produce and say to the associations, "You can only handle produce of such a size and quality." There has been some talk of dishonesty among growers in grading, but I do not think it is dishonesty. I will give you an example: A man came to my place about five years ago and said, "I have some potatoes to go to market." I said "Very well, but I want a certain size and no smaller." We must not have too small potatoes; that would do our business harm and be unsatisfactory to the buyer. So I left my business and went over to his place to see the potatoes. On my way I passed another field where they were working; I knew that he had some chapped potatoes and I looked for them as I passed, but they were not there. I had a suspicion of where they were, so I asked him to dump out the bags that were ready for market. As I thought the small potatoes were at the bottom of the bags. I told him that by sending those potatoes he was doing injury to himself, the buyer and to me. He said that he had not wanted to put those potatoes in, but that his boys put them in. And that is the trouble. You tell your men or your boys what you want done, but they won't do it. Now, if I tell some of our growers I want such and such a thing, I do not need to look at their stuff; I know that it will be all right, but others are not like that.

We do only a carload business. I sell for myself and our growers on a basis of 10 per cent. on the sale price, and as soon as I receive the money for the goods I pay the growers. We do not carry any stock at all; we have no warehouses, we simply find out from the growers what they have for sale. I tell them what I want from each; and on a certain day they bring it in and load it on the car direct from their wagons. There is no extra cost, and as soon as the car is ready it is shipped out. Possibly a wire comes in to ship one, two, or three cars on the first boat or train. That order will be given out immediately, and in all probability the car will leave that night. That is the way we are doing business at Sarnia. I charge my growers 8 per cent. for my work.

M. MULLIGAN: Why did those tomatoes that were shipped here from Leamington arrive in such a condition? By the time they reached here they were unfit for use.

E. J. ATKINS: Generally speaking, about the first week in August or the first Sunday in August we get one or two hot days that scorch our fruit. Sometimes that fruit comes on the market and it is almost sure to spoil. If it is watched very closely we can keep those out, but sometimes they get through. I have seen wagon after wagon load turned back on account of sun scald. It is very hard to distinguish and sometimes they escape observation.

The Leamington Association started up five different times, and fell down each time but the last one. Last year we shipped 230 cars of tomatoes alone. The onion growers came into the Association last year, with the result, as you have already been informed, that 90 per cent. of the onion crop of the province was shipped from our district. The business was carried on at a cost of little over 2 per cent., the growers selling their supplies at little under the market price, with the result that about 8 per cent. of their sales have been returned to the members *pro rata*. Last year they count that the profits on the supplies will run the business and the entire 10 per cent. will be returned to the growers.

It was then moved by J. Lockie Wilson, seconded by M. Mulligan, and carried unanimously, that a committee be appointed to confer with Mr. Hart to endeavour to form a co-operative branch in each of the centres, such as London, Toronto and Ottawa.

H. F. TOMPSON: I want to extend a hearty invitation to Mr. Hart and any one else who is interested, to come down to Providence and look over our books to get a knowledge of our methods.

J. J. DAVIS: One thing that should be emphasized is that you cannot run an association unless the members are loyal to one another. Your neighbor's interests are your interests in a co-operative association. In being loyal to your neighbor you are being loyal to yourself. The very basis of the thing is loyalty. If ever the thing is going to get started and get going, it will need a few men from each place of the right stamp to manage the affairs.

WM. SCHULTZ: We as a local association have set our price; at least we are going to try to set our price for the canning factories, especially those that are situated near us. We are asking 60c. a bushel from the canning factories for tomatoes. We grow a large quantity of tomatoes. I would like to know if there is any local branch that has set a price for tomatoes?

G. HELLERMAN: You say that you are going to ask 60c. a bushel of 60 pounds for the canning stuff. Do you mean that you deliver the entire acreage? If you contract for five acres do you deliver the entire acreage. The Western Rock people last year contracted 1,500 acres with one preserver alone, and all their produce for this year will be taken.

MR. FURMINGER: Have the canning factories contracted at all?

WM. SCHULTZ: There was a co-operative association started in St. Catharines where a company was formed to advance the prices, about two years ago. I do not like to mention the man's name, as I think some of you know him. Tomatoes were 25c. at that time. He was going around the country advocating a price of 35c., but at the same time he had contracted with the canning factory in St. Catharines for 25c. We would like to ask the Vineland men here and the St. Catharines men to get together and make a price.

ANOTHER MEMBER: All the factories in the western part have contracted for 50c.

WM. SCHULTZ: One other point: We can get from Toronto for individual advertising something that we cannot get from our own local branches: I refer to this envelope for sending out letters.

You can go along from St. Catharines to Hamilton and find on the station platforms that half the fruit is being sent out to private individuals. How does the private individual find out the name of the producers? He gets that name from the basket in which the fruit is packed. If the fruit is good one year, he will make a point of sending to the same grower the next year. There is a lot in that, and while the grower is getting a little better price than if he contracted wholesale, the consumer is also getting a better price. It would be a good idea if we sent out our mail in these envelopes with the name of the Association on them.

J. LOCKIE WILSON: We have the cut for the Vegetable Growers' envelope at Toronto, and if any of the branches that want that, without the name of the Ontario Vegetable and Garden Fruit Growers' Association stamped on it—they can put the name of their own branch on it with a stencil—if they will send in the money as soon as possible I will arrange to get them printed at cost price.

WM. SCHULTZ: Could we not come to some understanding in regard to the price of tomatoes to canning factories? If it is too late for this year, why not make a move to do it next year? Now is the time. If we do not get a price set soon we will never get it set.

A MEMBER: Why not extend that to other vegetables?

WM. SCHULTZ: Not so many of the other vegetables go into the canning factories.

G. H. Poad: Do you think a committee could be formed to go into the details of the canning business, so as to ascertain whether the canning factories are getting undue benefits?

A. H. MacLennan: I think in that relation that it would be well if you got down to the real business and found out actually what the cost is to the grower. The real point is not so much what the canning factories get, but what the cost is to the grower.

G. Hellerman: It has been proven by the consumers of the western part of New York State that tomatoes cannot be raised for less than 60c. per bushel, and that growers will need to have a good yield per acre if they are to break even at that price.

Mr. Furminger: I have not contracted for this year, and I have not accepted contracts in advance for the past four or five years.

A Member: It would be a good idea for the delegation to go back home and get their local clubs and organizations together—not, however, like we did at one time. We thought we would strike for a better price, but when the men came together to discuss it they had their contracts in their pockets. But by starting now we might organize for next year. We cannot work for nothing; we should have a say in setting the price for our own goods. If we all go back home and get our clubs together, we could get ready for next year.

G. Hellerman: The policy I am working on is to have all the produce paid for when it is delivered to the car siding. I had an interview with a company here, and I asked them to put money in the bank in the town the goods were shipped from, so that when the growers bring in their berries, etc., and deliver them to the car, they can go down to the bank and get their money. They agreed to do this. That is the policy I am working on—cash on delivery—and I am working hard on it.

ADDRESS BY A FRATERNAL DELEGATE.

H. F. Tompson, Amherst, Mass.

I wish to thank you on behalf of the Massachuetts Vegetable Growers for the invitation extended to me to attend this Convention of the Ontario Vegetable Growers.

We had a meeting some weeks ago of our Boston Association, and they are working on the same problem as you are; and we are to have a meeting of our Massachusetts State Association, and they again are working on the same problem that you are, and that is to make our own particular business an important factor in the work of reconstruction that is now being carried on, and to do our part in such a way that it will be a credit to ourselves and to our country.

I bring to you the best wishes of the Massachusetts Vegetable Growers and hope that we can co-operate for the future welfare of the people of this continent.

WHAT WE KNOW ABOUT SEED POTATOES.

W. T. Macoun, Dominion Horticulturist.

Every market gardener knows the importance of having good seed potatoes, but not every one knows how great a difference the results may be between the best seed and the poorest seed, hence the great necessity of knowing as much as possible about the source of the seed one is about to use.

At the Experimental Farm, Ottawa, in 1919, the best seed of Irish Cobbler yielded at the rate of 378 bushels per acre, while the poorest seed yielded 37 bushels per acre, a difference of 341 bushels per acre, and yet to look at the seed before it was planted it was impossible to tell that one was better than the other. Between these two extremes there were yields of 312, 293, 286, 261, 253, 97, 77, and 66 bushels per acre of the same variety.

Prepared for Market.

In a paper read before the Ontario Vegetable Growers' Association in 1909 the writer showed from the results of experiments at Ottawa that there was a marked difference in the yield of seed from different sources, and urged the vegetable growers to procure their seed from Northern Ontario. This advice was followed with good results, although difficulty was experienced in obtaining a regular supply. Since that time, however, the Provincial Government has done much to encourage the production of seed potatoes in Northern Ontario, until now there is a good supply of high class seed. The great importance of having good seed has been advocated by the writer since 1907, when experiments at Ottawa showed the marked difference in yield of the same variety from different sources, and even since that time experiments have continued to demonstrate the great difference in seed potatoes.

It is quite natural that one should ask why the seed potatoes from Northern Ontario or from New Brunswick are better, as a rule, than those from Southern Ontario, and in reply it may be said that it has not yet been clearly demonstrated how much is due to climate and maturity or immaturity of the tuber and how much to disease. Just as good and even better results have been obtained in some instances at Ottawa from seed produced at Ottawa the previous year as from seed produced in Northern Ontario or New Brunswick. For example, in 1919 Green Mountain potato from seed grown at Ottawa in 1918 yielded at the rate of 330 bushels per acre, from New Brunswick 312 bushels per acre, and from Northern Ontario 299 bushels per acre. Other seed of Green Mountain potato produced at Ottawa in 1918 yielded only 46 bushels per acre. What caused the difference? In this particular case the Green Mountain which produced the high yield was grown by itself in 1918 in a place where potatoes had not been grown for at least thirty years. In the other case the Green Mountain was grown among other varieties and stocks, most of which had yielded poorly. Now in this case it would seem that a disease of some sort was responsible for this great difference in yield.

Many experiments have been tried at Ottawa to endeavor to determine the true cause of the low yields usually obtained from home-grown seed. These experiments included different methods of storage, different dates of planting, different dates of digging, growing potatoes under straw in cooler soil than they would otherwise have, irrigation compared with no irrigation, selected versus unselected hills, the seed from different kinds of soil on the Experimental Farm at Ottawa were compared, but differences in yields as the result of any of these methods were small, whereas, when seed potatoes from a relatively cool climate were planted in light soil where potatoes had not been grown before, the yield was very good.

There are several diseases of the potato that plant pathologists have been studying in recent years which play an important part in reducing the yields of potatoes, such as Mosaic, Leaf Roll and Rhizoctonia, and there are, doubtless, other physiological troubles that will yet be worked out. Recent evidence in results of experiments at Ottawa point to some yet obscure disease as the cause of the rapid deterioration in yield at Ottawa.

There is one outstanding fact and that is that seed potatoes from cooler summer climates than that at Ottawa give much better results than seed potatoes that have been grown for several years in the warmer parts. The planting of immature potatoes has been recommended in England for more than one hundred years as a means of increasing the yield of potatoes, and in Great Britain it is at the present day well recognized from the results of careful experiments that seed potatoes from the South of England, where the climate is comparatively dry and warm and where potatoes ripen much more rapidly than they do in Scotland and Ireland, do not give nearly as large yields as seed potatoes from Scotland and Ireland. In Canada it has been found by experience that taking one year with another the yield is greater when the seed has been produced in a relatively cool climate.

What is still not yet determined is how much of the increased yield is due to increased vigour because the potatoes were grown in these cooler climates and were relatively immature as compared with those grown in hotter and drier climates, and how much is due to freedom or presence of certain obscure and not fully understood diseases, which so far are not so prevalent in the cooler climates. It would seem from our present knowledge that the best seed potatoes come from those parts of Canada where, as a rule, the main part of the crop is most immature though of good marketable size when the tops are cut down by autumn frosts and when there is little or no disease in the crop. If locally, in the older settled parts of Ontario, potatoes remain green and healthy until killed by frost they are likely to give as good, or nearly as good, results as from further away, but, very often, in the warmer parts of Ontario the tops are dead in August.

It is not necessary to tell the members of the Ontario Vegetable Growers' Association that seed potatoes should be kept as nearly dormant as possible until planting time unless they are sprouted in the light. If potatoes sprout in a warm cellar their vitality is weakened and they will not start off again as quickly or with the same vigour when these sprouts are broken off at planting time as if the sprouts were too short to break off. Storing potatoes in large piles has been found to injuriously affect the vigor of seed potatoes as those in the bottom of the pile cannot get enough air.

J. A. Williams: What is the cause of the seed potatoes that we get from New Brunswick having weak tops, probably anywhere from 20 to 50 per cent. of them?

W. T. Macoun: There are two diseases that would cause that; Leaf Roll is one.

J. A. Williams: Have you tried any Virginia seed?

W. T. Macoun: No.

J. A. Williams: I have been trying that for the last seven or eight years with great success. The Irish Cobbler does well. I planted last year on the 21st of April and on the 18th of July we were getting potatoes a pound weight. It is the best seed I have ever had, and I have tried Northern Ontario and New Brunswick.

W. T. Macoun: What variety did you say?

J. A. Williams: Irish Cobbler, from Virginia.

VEGETABLE EXHIBITS.

Wm. Trick, Ottawa.

Mr. Wilson has asked me to speak on garden exhibits. I have been exhibiting at the Central Fair for over thirty years, and have won several prizes, and that, I suppose, is why Mr. Wilson has called on me. What I have to say is pretty much along the same lines as touched on by previous speakers, co-operation and grading. Of course about exhibits the important thing is grading.

I have always been careful to select according to quality, type, and uniformity. You might go out into the field and pull up a considerable quantity of stuff, but when you get it in you will find that it is not uniform. You might want a dozen carrots, but to get a dozen that are all as much alike as two peas is somewhat difficult, and you may have to pull a good many before you get them. Then you have to clean them and put them up in packages, and make your exhibit look as well as possible generally. I was at the Show last night, and I saw a lot of potatoes there that took prizes because there was nothing to compete with them, but there is hardly an exhibit there that has been selected for uniformity. That is where a lot of exhibitors fall down.

For instance, five apples are called for. They will get four the same size, but will place a great big one on the top, and that spoils the look of the whole exhibit. In judging it would be a good thing if the judge could take time to mark on the card where the exhibit had fallen down. That would show exhibitors where they had failed, and would encourage them to try again if they are beaten one year.

We find lots of people come to exhibitions whom we cannot get to show their produce, but they will say when looking at the exhibits that they could do as well as that. But when you undertake to prepare seventy-five exhibits or so, along with your other work, marketing, etc., it means a considerable amount of work. I always try to make my exhibits as attractive as possible. I like a background to build against. You cannot make a good display on a flat table. You take a background perfectly green and then place your heavy stuff, like cabbage, and then the smaller stuff, and fill in around with green vegetables such as summer savory, chard, kale, and such things, and then as you build keep your display balanced on each side, working in your different types, cauliflower, radishes, turnips, carrots, etc. You can use Scotch kale to great advantage for decorative purposes, and also the other green "salads." It makes your exhibit very attractive.

I have been exhibiting now for thirty years. I was beaten the first year, but since then I have always taken first place. This year I won $240. I have managed to do my other gardening and marketing as well. I would like to see more gardeners come into these competitions; I like to have a close run so that it is worth while to beat.

I went to Aylmer to exhibit last year. Three of us were supposed to go and the exhibits were supposed to be in commercial packages. When I got there I found only one other exhibit—a wheelbarrow or two set about two feet apart with stuff piled on it; and the other grower did not show up at all. I had my exhibit all built up: about 14 feet of platform up against the wall, and arranged my stuff on that, and it made a good display.

Exhibits are worth while, not only for the prize money, but for the advertising. People get to know your produce, and after a while so many orders come in that you do not need to go to market at all. I have not gone to the market for some years; I dispose of my stuff to the stores. And I always put the same quality in the bottom of my baskets as on top, so that they know they can depend on what I sell them.

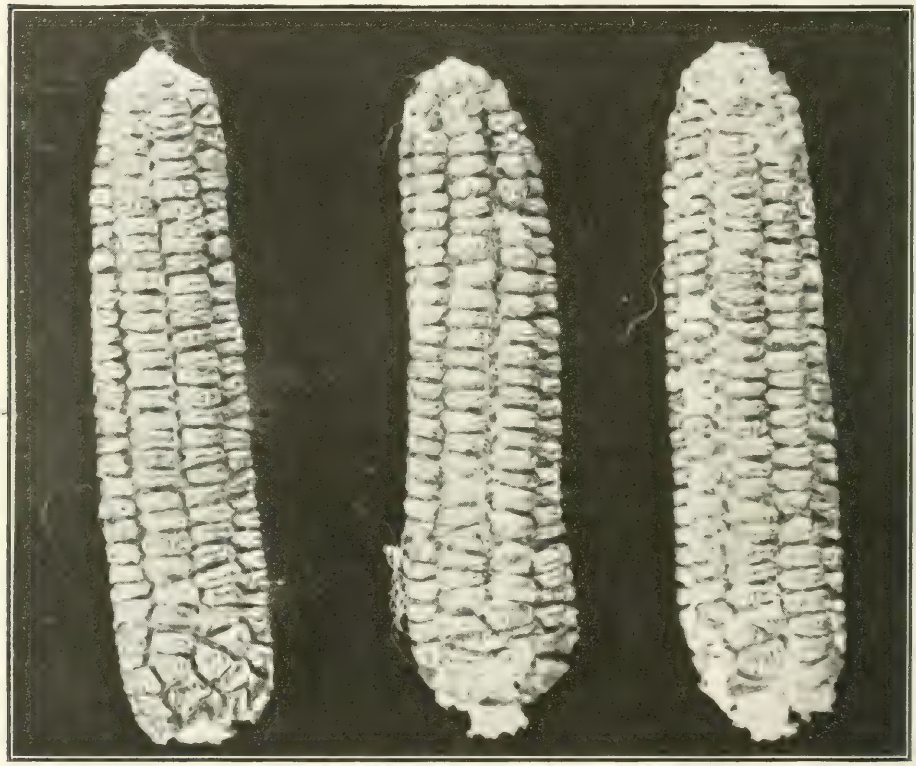
Grading of produce should be carried out through the country. The man who does not grade his stuff comes into the market or the store, and he may sell it for less than I do. Sometimes the storekeepers have brought this up, but I tell them to offer the two qualities side by side. Customers, generally speaking, will take the superior quality, even at a higher price.

Another point I would like to mention is the variety of seed. We have too many varieties of seed shown in our catalogues, and I think it would be a good idea if gardeners would make trials to find out which are the best varieties, and stick to them. A good many gardeners do not really know which is the best variety for their purpose. Take onions, for instance, you will see Southport White Globe and Silver King. They are both good, but Silver King is generally too far gone by exhibition time. If we could get one type and stick to it everybody would have a better chance.

SMALL HOLDINGS FOR THE RETURNED SOLDIERS.

E. J. Atkins, Leamington.

The question of small holdings has become a prominent one during the last two years. A large number of our returned men have been advised by the medical boards to seek outside employment, as the ravaging effects of war have made them unfit for inside occupations. Up to November 8th the Land Settlement Board had placed eighty-eight returned soldiers on small holdings. This is, however, only a small percentage of those that applied, as a great many were unable to qualify, or were, upon investigation, found not to be suited to farming. Some of the applicants were physically fit to undertake a general farming scheme, but the majority of them favor the smaller holdings, as the work is less strenuous and less physical energy is required.



Golden Bantam Corn.

Vegetable gardening lends itself admirably to this class of men. A small holding of from five to twenty-five acres is quite easily managed by the soldier and his family, and it is surprising the interest that is shown by these men in suggestions along this line.

The question has arisen: Can a man make a living off a small area and still not have to overwork? My answer to this is most emphatically that he can, provided he is started right. Of course no one would expect him to settle on a bush farm of ten acres or so, even cleared land, if not fertile, and succeed. All he will receive will be a broken heart and starvation; but if the proper land is selected in the right locality, a good living can be made and money saved if care be taken in the management.

Someone will ask what is the proper soil and where the right locality? To answer this with any degree of accuracy and detail, one must know the exact crops that are to be grown. A given crop is suited to certain types of soil and climatic conditions, and only gives the maximum return when confined to these areas. There are a great many general factors that must be considered, and these I will take up briefly in order of their importance.

Markets: This is perhaps of greatest importance in selecting a location. Where only a small area is farmed and a small quantity of a crop is grown, the market must be near at hand to dispose of it profitably. Large cities always have the largest demand, but one must not be too eager to locate near these. The land is high priced, and the Settlement Board does not favor land worth more than $300 per acre. The market demands are more exacting and greater skill is necessary to successfully meet competition.

There are excellent districts near many of our good-sized cities or towns where land is medium priced, and there is a good market that will easily consume all that would be produced on a small area. The smaller markets are not so exacting in their demands, yet high quality is appreciated and helps much to secure remunerative prices. One of the secrets of success in gardening is to be able to anticipate the demands of a market, and to have a large and sufficiently early supply ready to meet these demands. This depends as much upon the ability of the man as upon the fertility of the soil.

Soils: This is next to be considered. A gardener is more apt to succeed with a good market and a poor soil than with a poor market and a good soil. Favorable soil conditions are of extreme importance, however, and should be carefully considered when selecting a location. A sandy loam with a good porous sub-soil insuring good drainage is undoubtedly the most valuable for a general line of market gardening. The physical properties are of more importance than the chemical, as the latter can be added while the former are almost impossible to change.

Climate: This will require some consideration and will have some influence in selecting a locality. Vegetables can be produced in practically any of the counties of Older Ontario. However, if one wishes to be on the early markets a locality that is free from late spring and early fall frosts is much to be preferred. A large body of water is a great influence in this respect, and so we find that the greater number of successful market gardens are somewhere near the Great Lakes and mostly along Lake Erie and Lake Ontario.

Water Supply: A cheap and abundant water supply is absolutely essential, especially where greenhouses and irrigation systems are used. These require an unfailing supply of water during the growing season.

The lay of the land is worth noting. Gentle slopes give both good air and soil drainage. Good air drainage is of much more importance than is generally supposed. Steep hills should be avoided as they are difficult to work and wash badly. A south or southeastern slope is to be preferred for most crops.

Windbreaks are a great advantage and are especially valuable where extra early crops are grown.

Never locate on a poor road. Mud, ruts and steep hills are enough to discourage the staunchest heart, and greatly increase the marketing costs.

Shipping facilities need not be given very serious consideration for small areas, as the local market can be depended upon to consume practically all that will be produced.

The price of the land is one of the last things to be considered. Unless the price is out of all reason, this should not prevent one from buying in a locality where all the foregoing factors have been considered and approved, as one good crop, profitably marketed, will make up the difference, and the succeeding years will mean excess profits and give added pleasure to the work. If the settler is depending upon the Board to finance him, however, land that costs more than three hundred dollars per acre, without improvements, cannot be bought unless the applicant has unusual ability or experience.

The capital required to equip and operate a market garden is larger per acre than for a general farm. The amount varies with the particular line followed also. The larger the acreage the smaller the capital per acre required. The more specialized, the less the capital. The amount of glass also regulates the capital required. The more intensive the methods the greater the capital. The fertility of the soil also influences the amount of capital needed. Poor soils are more expensive to operate than rich. The distance from market is another important factor. A long haul over bad roads is much more costly than a short one over a good road.

The capital required where conditions are normal is about $75.00 per acre where ten acres or less are farmed, and $50.00 per acre where up to twenty-five acres are farmed, exclusive of buildings. Where glass is put up this amount is greatly increased.

These figures should not be discouraging to a beginner, however. It is possible to start up on a few acres with very little capital. Progress is slower, however, under such conditions, but it is better than to borrow money and make heavy investments, without the certainty of financial success. Anyone who is familiar with the present prices of tools, implements, fertilizers, glass, etc., must realize that considerable capital must be available before commencing on even a small scale. Those who apply to the Soldiers' Settlement Board must have ten per cent. of the capital necessary to buy and equip their farm. The Board will advance up to $5,000 for land and up to $2,000 for stock, implements and equipment, besides $2,500 for improvements.

The profits that can be made off a small holding depend so much upon the many factors influencing the production and sale of the produce, that it is hard to give even an approximate estimate of the amount that should be looked for. Personally, I know of one grower who sells from ten to twelve thousand dollars worth per year off thirteen acres of land. This is seventy-five per cent. profit. At home we make a specialty of early cabbage, egg plant and peppers under irrigation. These give us a net profit of from $750 to $1,000 per acre every year. Early tomatoes give a net profit of from $250 to $500 per acre. I could name many instances where up to $1,500 per acre has been made from the ordinary market garden crops under favorable conditions.

SMALL HOLDINGS FOR RETURNED SOLDIERS.

F. J. Reeves, Humber Bay.

This subject is one which is engaging the attention of thoughtful people at the present time. Many of the returned soldiers from overseas are in very poor physical condition; many of them led an indoor life previous to going across, but now are in such a physical condition that this is impossible, and they must remain in the open air. For this reason they are looking towards agriculture as the means of livelihood. Most of these men are in such a condition that the ordinary farm life is unsuited to them as they are unable to stand the hard work connected with such a place. Something then must be brought to their notice, which, while returning to them a fair livelihood will not draw upon their stores of energy, but will tend to increase them and to this type of man a small holding of from five to twenty-five acres is the solution of the problem. Besides this there are men who, while physically fit, are not desirous of again taking up town or city life, but want to remain in the free, open air. They do not desire the heavy work of the ordinary farm and they have little knowledge of handling one. Many of them have had experience with a small town or city garden and these also are looking for this type. To make a success of a small holding a man must have ambition, adaptability, a fair amount of common sense and business ability and willingness to take the hard knocks, and, in many cases, long hours which go with this intensive type of farming. If he has a growing family of fair or large proportions so much the better, as they will aid him during the busy season, and, at the same time if his property has been selected carefully, he will be able to give them a fair education.

There are many types of small holdings which may be brought to the attention of such men: (1) Where the man is physically unfit to do much work and has a pension which will give him a small assured income. To this man three to five acres of land near a good town or village, on which he can raise chickens, small fruits, vegetables and bees is most suited. This land need not be very high in value; not more than $250 per acre and much of it can be bought for $100 to $125 per acre. On such a place a man can grow practically all of what he eats, have some to sell and at the same time give his children a good education.

(2) Another type: One for a man who knows something about poultry and bees would be, ten acres near a live centre where there is plenty of clover. This man would start out with probably 100 layers and fifteen to twenty colonies of bees to be later increased to 1,000 layers and seventy colonies of bees. Besides this he would grow some small fruits; raspberries, strawberries, currants and gooseberries; also cherries, plums, pears and early apples. A bed of asparagus would also be a paying proposition for him.

(3) For the man who before going overseas had experience as a market gardener; this man should be placed near a live town or city or near a good shipping centre. If the district has organized a co-operative society or has a canning factory so much the better. The land must be of a sandy loam or light clay loam or muck nature. It should be well drained and not more than two miles from the station. This area should not be more than five acres so that the man can handle it as intensively as possible.

If a man wishes to specialize in fruit he would need about ten acres of land which would be worth about $500 per acre. He would grow raspberries, strawberries, currants, gooseberries, blackberries, black raspberries and two or three acres of vegetables.

For a man who has not been thoroughly trained in intensive work and has a desire for a large amount of land, there are two types that he can handle. One is on twenty to twenty-five acres where he would raise grain, poultry, bees, small fruit, hens and pigs. This man would probably grow three-quarters of his land in rotation of grain, pasture, clover and truck crops. The truck crops would depend on the section in which he was, but would most probably be early potatoes, early tomatoes, corn, cabbage, onions, beets, carrots, turnips and parsnips.

For a man who has a liking for dairy cattle, his desires may be met by a twenty-five acre farm on which he would grow grain, clover, corn, potatoes and root crops. He would have a small area, say one or two acres, of small fruits and a small orchard of from two to four acres. This type of holding must of necessity be near a condensery or a butter factory, unless he can ship to the city market. The soil should be of a sandy or clay loam; a soil easily worked and one which would return good profits if carefully handled.

Cabbage Crop.

In the selection of these holdings it is necessary that a careful survey of the location and type of the soil should be made. Local conditions should be discussed with leading men in the section who have made good so that the good or bad points of the particular place in view can be carefully gone over. In most cases the soil should be of a sandy loam or light clay loam in nature. Nothing heavier than this should be bought as the clay nature would make the land much too heavy for any of these.

Small holdings such as have been described can be located anywhere in the Province on the sections which seem most suited. The best section would be south of the line running from Toronto through Guelph to Goderich or the south western part of the Province. This section is one of the best suited from its soil, climatic conditions and the fact that it is thickly interspersed with railways and radial lines and contains the best roads in the Province. These facilities render it easy to bring the produce to market and as in a number of the sections co-operative societies are already formed which take care of the produce of the grower it lends every facility to the man for making good. In the market gardening business the returned soldier should have as good an opportunity for making good as in any other branch of agriculture. The need for increased production in vegetables is great and will be greater as Ontario turns more and more to manufacturing. The vegetable growing section of Canada is very limited, due to climatic conditions. For this reason it will be necessary for Ontario to supply most of the Dominion with the more tender types of vegetables, except British Columbia, which, owing to the natural barrier of the Rocky Mountains, has a better climate for this work than the rest of Canada.

As the man becomes more able in the work he will gradually branch out to one line. He will probably take up greenhouse work, which is still in its infancy in Ontario and Canada. For this reason there is no use in having a pessimistic view, for if a man wishes to get ahead there is no reason why he should not do so.

The Soldier Settlement Board have fixed a maximum price of $300 per acre and the minimum acreage of five acres. So far during the past season about one hundred returned men have been placed on small holdings being about ten per cent. of the total settled on the land.

The Price Paid Averages:

Land	$2,750 00
Stock and equipment	1,000 00
Permanent improvement	250 00
	$4,000 00

Before closing, there is just one thing I would like to speak of. It has been my privilege during the past summer to examine and valuate a large number of holdings for returned men. I have travelled over the Province, and it is a privilege I value very highly to think that I was given this duty. Perhaps one reason for it is that I know most of the vegetable growing districts of Ontario.

I have boys of my own who are returned soldiers, and I have a great deal of sympathy for the returned men. One thing we have to face is that there will be failures among them; there are failures in every business and with the returned men we have to remember that they have been through what no others have been through. They may look physically fit, but their nerves are far from settled, and after a year or two of hard work they are liable to break down. Now, we must try in every section where there are old and experienced vegetable growers to give them every assistance in our power. A great deal of the success or failure of a returned man will depend upon the assistance given him by men already established in the business.

When I started out, I found that people were not willing to show me anything. But that spirit has changed, and we have to show more than sympathy to the returned men. There are inspectors being appointed to go around to inspect the holdings of the returned soldiers, and I think that these inspectors should be practical men, who, when they find a man who is not running his business in the right way, are ready to take off their coats and show him how. But ninety per cent. of the success of the returned men will depend upon the other growers in their locality.

Now, perhaps this is something I should not say. Some of the men on the Advisory Board that pass on loans for returned men are not in sympathy with small holdings. I would not like to say that they knock the idea, but at least they do not encourage it. They seem to think that sooner or later the small holdings will not be a success. There should be men on that Board who have worked on small holdings and know the business from the ground up. I believe that at present there is only one farmer in the personnel of the Board.

I have a resolution to read which I hope will be adopted:—

"Whereas a large number of returned soldiers are taking up land in Ontario under the Soldiers' Settlement Board, and

"Whereas many applications of such soldiers are for small holdings of from five to twenty-five acres, and

"Whereas the probability of success of settlers with equal degree of experience is greater on small holdings than in general farming, and

"Whereas there is no representative on the Loan Committee conversant with this phase of farming, therefore

"Resolved: That there be immediately appointed as a member of the Loan Committee of the Soldier Settlement Board a member competent to advise with regard to settlement on small holdings."

Seconded by M. May and carried unanimously.

J. J. Reeves: I know that there are people who say that a man cannot make a living on a small holding, but I have managed to make a living out of mine, and have brought up a family of five boys and two girls. And we have done that on five acres of land, where there is not half a mile of level ground on the whole place.

JUDGING FIELD CROPS.

Jas. McKee, Ottawa.

There are perhaps as many methods of judging field crops as there are judges, but generally speaking, judges, if capable and conscientious as we may assume them to be, will in the end arrive at the same conclusion.

One of the most important factors in the judging is the score card. It frequently occurs that the judge is forced by the score card to decide in favor of a certain crop, while his better judgment tells him that the best crop is not winning. I want to come back to the question of the score card again.

One thing a judge must guard against is jumping too hastily at conclusions. As he enters a field his eye is struck by the general appearance of the crop, and unless he is very careful in making a thorough inspection that first impression is liable to govern his scoring.

Here again a properly prepared score card will come to the rescue and keep the judge straight, and the general appearance, neatness, etc., while getting their due marking, will not necessarily be the governing feature.

Also there is the personal element. One judge prefers a certain type to another. As an example, one prefers a flat onion to a globe-shaped one, and judges and scores accordingly. This is obviously unfair. The points which should be considered by him are real kitchen value and public preference which govern the market.

Now as to the garden score card. As it stands now, I think all will agree that the general appearance, neatness, etc., are unduly emphasized, and that market value, undoubtedly the real thing after all, is not sufficiently recognized.

Now to go into detail of the score card:

In sections (A) (C) (D) and (E) having possible scores of 10, 10, 40, and 10, respectively, a total of 70 may be obtained without having a crop of any great value.

These things should all be recognized, but in my opinion they are merely incidental to the crop, and if any gardener can by merely being neat and orderly score 50 points instead of 70 from his market value score, this is surely enough.

I submit for your consideration such a score card as the following:

(A)	General appearance of crop, including neatness around buildings, yards, fences, etc.	20
(B)	Freedom from blight and insects	10
(C)	Cultivation	20
(D)	Market value	50
	Total	100

BETTER SEED.

A. J. Logsdail, Ottawa.

The necessity for better seed in many lines (it might be said, in all lines) is a statement with which no one will quarrel The seedsmen themselves are continually on the lookout for better seed. One evidence of this fact is to be seen in the great number of new varieties and novelties that appear each year in the seed catalogues. If the varieties we grow or the seed we obtain of these varieties were entirely satisfactory then the number of highly-coloured descriptions of many so-called new creations would be very greatly reduced.

The loss both in labor and production through the use of unsatisfactory seed must be enormous each season, and the natural question that arises is, how can this condition of affairs be remedied or even improved?

We are aware that the Government is spending annually a considerable sum of money in controlling and maintaining standards of seed, in relation to its purity, vitality and freedom from noxious weeds.

It seems to me, however, that there is one phase, and a very important phase, that has not received the attention it deserves, and I refer to the production of Canadian grown vegetable seed of varieties particularly suited to our own climatic conditions. Our summer seasons are comparatively short, and we require varieties that will naturally fit in with those conditions, that is, we require early-maturing varieties, and for large areas of this country we require varieties earlier than any we now possess.

It has been proved time and again that acclimatized seed is superior to seed that has been introduced from a country where the climatic conditions are very different. This very fact, however, has been the greatest handicap with which we have had to contend in the past. The great seed growing areas of the world where the bulk of vegetable seed is produced possess climatic conditions peculiarly adapted to the raising of enormous crops of seed and thoroughly maturing it at a minimum cost. The seed that comes from these countries is heavy, plump and attractive in appearance, and judging by external appearance is often superior to Canadian-grown seed. We should remember, however, that we are not buying seed for its appearance; we are buying it for what it contains, for what it will produce when that attractive or less attractive exterior has rotted away.

The inherent breeding of seed is even more important than the inherent breeding of an animal or herd. A grade cow may be of little value from a breeding standpoint, but it often represents a valuable commercial asset over the period of its productive life. Seed is bought for what it will produce or breed out. Its appearance, its weight, its size is of little consequence as compared to its ability to produce desirable progeny.

The question then arises, "Can seed be grown successfully in Canada?" A full answer to this question would require much more time than is now available. It would necessitate a careful consideration of the different requirements and the climatic variations of half a continent, but briefly I would answer the question by stating that seed of first-class quality can be successfully grown and matured. The expense of growing this seed, however, would be considerably greater than is the case in countries where climatic conditions are more favorable. The yield of seed would probably be considerably less, the expense in maturing seed of certain crops would be heavier, and the risks of failure would be greater, but if one considers the enormous benefits that would be derived from carefully bred and acclimatized seed, the extra expense incurred would be a very minor item to offset the added advantages gained. Further, such work would have an accumulating benefit, after a period of twenty or thirty years (and possibly at a much earlier date) we would possess varieties actually and not relatively Canadian.

During the past few years seed of a number of vegetable crops have been grown successfully at Ottawa. Our successes have not been without our failures, but the type of seed produced, its vitality and the kind of crops produced from this seed prove beyond question the urgent need for seriously considering this important factor in the production of better seed.

I have here a few figures that represent our average yield of seed for several vegetable crops grown during the past three seasons:—

	Pounds.	Ounces.
Cabbage	531	0
Carrot	703	8
Beet	1,095	0
Parsnip	969	0
Onion, Yellow Globe Danvers	459	0
Onion, Red Wethersfield	303	0
Radish	541	0
Spinach	507	0

From the yields obtained we fully realize that there is much yet to be learnt. We have obtained, in some cases, a yield almost double that of the average here given. A sandy soil may assist early maturity and thereby ensure harvesting fully ripened seed, but in some cases a loam soil will produce twice the yield of seed that could be obtained from a sandy soil, and this seed, though not fully ripe, may be sufficiently developed to permit of harvesting and drying under cover without injuring its vitality.

There is a lot of further investigational work to be carried on regarding methods of growing, of storing stock of biennial seed crops, of the stage of growth at which the plants may be harvested without injury to seed vitality, of machinery in cultivation and harvesting, and many other closely related problems in connection with seed growing under our own climatic conditions with the object of producing better seed.

J. LOCKIE WILSON: What variety of pea have you found to be best?

A. J. LOGSDAIL: American Wonder.

J. LOCKIE WILSON: How does it compare with Carter's Earliest of All?

A. J. LOGSDAIL: That is an earlier variety. We have only had that in our trial varieties of seed that have been obtained from seedsmen, and seedsmen get their seed wherever they can buy it.

METHODS OF IMPROVING OUR VEGETABLE CROPS.

O. J. ROBB, VINELAND STATION.

Of the various methods of improving our vegetable crops there is none so important and so sure of lasting results as the origination and selection of strains or varieties which are adapted to the district in which they are grown commercially. It is true that to-day we have too many (so-called) varieties, but of really distinct varieties of outstanding merit we have but a limited number.

To give you some idea of the multiplicity of so-called varieties I want to quote a few figures. A year ago one of the best seed firms in the States collected all the varieties they could find from any source and compared them in trial plots and estimated the number of distinct varieties.

Variety	No. of Listed Varieties	No. of District Varieties (Inc.)
Asparagus	49	4
Beans	775	75
Beets	327	25
Cabbage	638	43
Carrot	313	22
Cauliflower	208	12
Celery	191	19
Sweet Corn	352	27
Egg Plant	114	18
Lettuce	546	47
Muskmelon	382	33
Onion	399	34
Parsnip	85	3
Pea	506	48
Pepper	137	28
Radish	511	39
Tomato	468	45
Turnip	260	26
Watermelon	253	34
Total	6,514	582

The improvement of any crop is a very complicated problem at best. You are well acquainted with the best practices of soil fertilization and cultivation for your various crops; also the best grades of seed to use and the proper moisture and temperature conditions for them. You may have the best known variety but may not have the best possible variety, even as the other conditions may be more favorable for the maximum production.

There has ever been a desire to discover new and better varieties or strains. And, indeed, on looking back over the history of any vegetable crop we find distinct stages marked by the introduction of new varieties superior to the older ones. The past history justifies the grower in expecting and continually searching for better varieties. Apparently there is no limit to new strains, and as competition grows more keen in the commercial world the demand for better varieties will become more insistent. It is within the past fifty or sixty years that any consistent efforts have been made to improve or originate new varieties by isolation and cross fertilization. Previous to this time only those plants which happened to come under some observing person's eye were saved. Of late years, many growers are selecting outstanding plants and saving seed from them. This will undoubtedly increase production if maintained. A number of specialists are trying to originate new strains by cross breeding with considerable success. By confining my remarks to variety improvement, I hope to interest you mainly by an explanation of some of the fundamental principles involved and to show you where in your every-day practice you can take advantage of known and proved laws of variation and reproduction.

Onion Seed.

We must know and appreciate the fact that all plants vary; if this were not so, little could be done toward plant improvement. Yet we are told that "like begets like," which is true within certain limits. If we could be sure that "like begets like," and select certain specimens and save seed from them, in a short time we would have a strain which would breed true and uniform and remain equal to the original selection—provided cultural conditions were the same. This in itself would be a big step forward, as our present-day varieties are anything but uniform and true to type, but we would have to stop there only for the fact that variation is the rule.

It is due to this one factor "variation" that we are able to increase or to intensify a given character of many vegetables. Yet there appears to be a limit even here which cannot be surpassed. Take the example of the sugar beet. In 1850 sugar percentage of beets was found by crude tests to range from seven to fourteen. To-day, occasional ones give twenty-six per cent., but seldom are any found with over twenty-one per cent. sugar. There has been no regular increase in the percentage of sugar content. No recent increase has been made, and it is possible that if accurate tests were made in 1850 and in as large numbers as to-day, the tests then would stand as high as those of the present time.

However, in all cases where cross breeding is employed the plant breeder finds unlimited variation. The plant breeder while looking for good variations which will breed true seeks to cause such variations.

The Cause of Variations.

Variations are caused in part by environment such as increased fertility of the soil, changes of the climate and moisture conditions. Many of these variations are inherited to some extent, but usually these variations are not permanent unless rigid selection is maintained. Nature's method of causing variation is that of cross pollinating. With this factor in his control, the plant breeder can cause any number of variations. It may be said of making many varieties there is no end.

Plant breeding may be defined as the production of plants that are adapted to specific conditions or requirements. Thus the breeder must have a definite, clear-cut purpose or ideal; he must be well acquainted with present varieties and conditions. The commercial grower can render valuable assistance in recommending varieties and describing characters desired. The breeder having secured the variation, his next step is to isolate or fix this strain so it will breed true or remain constant. This is a very difficult thing to do with some vegetables and very easy with others. Those which are propagated by runners or cuttings like potatoes or rhubarb are fixed as soon as the variation is selected; but with those which are propagated by seed and have blossoms which cross fertilize readily, it would require several generations of self-fertilized seed to fix the type and to multiply the seed for use. Even then care would have to be taken to prevent cross fertilization with other varieties. While with others such as asparagus, corn and vine crops, which must be cross pollinated, care must be always taken to insure self pollination if the type is to be fixed.

Where cross fertilization is practiced, the desired variation or type may not be found until several generations are grown from the hybrid seed. It has been discovered that with certain crops such as corn and tomatoes, the first generation hybrid seed gives plants of outstanding vigor, and many growers seek to take advantage of this by providing themselves with hybrid seed each year. This is a very good method of increasing yields, but depends on a limited seed supply. It will depend on the grower to maintain and to make the most possible use of any improved variety. Thus it is necessary that there be some standard adopted of each variety introduced which should be recorded with complete descriptions. This brings up the question of acclimatization, but while many characters of a variety are varied, due to climatic conditions, yet the descriptive records would still identify a strain or variety in comparison with other varieties of the same locality. The production or yield of any variety together with its quality will determine its commercial value.

It is of the greatest advantage to the grower to understand the methods of breeding and selecting work on the various vegetables he produces.

It is not wise to select a single outstanding individual and depend on getting increased yields, because if the plant is a hybrid and reproduces by seeds the very first crop will be a mixture of several types. It is necessary to continue to select for the type in mind and to keep only the strains which are known to be superior.

Different methods are required with different crops, and for convenience they will be grouped according to their habits of reproduction.

Selections of such crops as potatoes, rhubarb, horse radish, and multiplier onions are most easily fixed, for once the variation is selected it can be multiplied by root division, whereas if we had to depend on seed from these selected plants we would be apt to get a considerable number of poor plants.

Improvements in methods with these plants would be to grow large numbers of seedlings and select the most desirable one and multiply by root division. Cross breeding may be resorted to for more variations. In this case the plants should be carried to the second and third generation. The same methods hold true for the self-fertile crops, as peas and beans, namely, cross breeding and selecting for desirable characters. With the vine crops like cucumbers and melons, also corn and asparagus, which are naturally cross pollinated, more care is required. Any selection made must be kept from cross pollinating with other varieties when grown commercially for seed, and until any selection is tried out and proved to breed true to type it should be self-pollinated.

For all other crops the same general methods apply. Where selection alone is employed, select from large numbers, keep from crossing as far as possible. Where cross breeding is undertaken to secure certain types, use plants possessing in a strong degree those characters desired and self pollinate the hybrids until the second and third generation, because it is not until then that certain types can be definitely isolated from plants reproducing by seed.

To sum up, the grower must observe his crops and study the varieties at his disposal. He must ultimately make his own choice of any variety tried out. But in this, he must keep in mind the standard type his market demands.

The five most important factors in crop improvement are as follows: —

1. Secure the best strain or variety and keep it pure.
2. Use only highest quality seed.
3. Cultivate soil in best possible manner.
4. Fertilize to the maximum extent for returns secured.
5. Make sure of most favorable moisture and temperature conditions.
6. Insure the control of disease and insect pests.

GARDEN MANAGEMENT.

W. J. Cooke, Cataraqui.

We have in our country to-day, as in all others, what might be termed an economic vicious circle. Labor is asking every day for a higher wage and is receiving the same; managers of our industries in their turn ask greater prices for their productions and they are being paid; and the producers of food and fuel in this country are both paying the high wages demanded by labor and the high prices demanded by manufacturers for their goods. It is reasonable, then, to suppose that the producers must also receive higher prices for their produce than they are now receiving.

Now, this we all know is a condition that tends towards the development and the best interests of our country, but it is probably the cause of much of the unrest that we find to-day, and it is the duty of each and every one of us in our small way to do everything we can to overcome this, and it is only as we act individually or collectively, that we can do anything to hasten the period when we will be back to normal.

How can this be brought about? The laborer can hardly receive less wages under present conditions, but he can give us a better day's work. The manufacturer can give us better service, and—as we often think—could be content to take less profit on his goods. For our part, we—the producers—should try if we can to hold the price of our goods at the same level and still retain a little for ourselves. How can we accomplish this? There are several ways that I can think of. First, by accounting for every dollar spent in production; second, by better marketing methods, by better economic methods, and by placing our goods on the market at a smaller cost; and, third, by better management. This is a subject about which very little has been said formerly, and I feel that I am on fairly new ground as far as our business is concerned.

The first point I would like to make is with regard to the manager or producer himself. How has he in the past fallen down? I am afraid that the idea may not be popular with a good many of us, but I think that the garden manager has fallen down in that he has contributed too much to the laboring side of his business. In many cases the manager has been, and still is, the best laborer on the place, but I think that it is poor policy for the garden manager to carry on the laboring end too closely. While he is probably better acquainted with the garden than some of his laborers, yet he cannot give his best attention to the management if he continues his labors from morning to night. You may say that he can plan out the work in the evening, but in answer to that I would say that I am a man not far past my prime, and, I think, a pretty energetic worker, but I cannot do the best planning if I labor all day and then try to work out plans in the evening. That requires greater vitality than I have. Besides, that planning will not always work out, because there are many changing conditions in the garden from day to day, and the manager must be ready to meet them as they come up.

Probably one of the greatest expenses in your district, as it is in ours, is your labor problem. I do not know whether you realize what a large part of your expenses is paid to your labor. I have statistics here with regard to expenses on our place. In 1917 it cost $6,188 to run the place, and of that $4,163 was paid to labor; that is about two-thirds of the total expense was paid to labor. In 1918, out of a total expense of $8,363, $5,156 was paid to labor, which is about fiveeighths. Now, you may say that in your own case it does not appear to be anything like that, but I think if you look at it correctly you will find that it does. You may say: But I work myself. Are you not worth $3 per day the same as your laborers? Or rather, if your laborer is worth $3.00 per day, are you not worth $4.00? And if you are an efficient manager as well, $5.00? I think that if you look at it in that light, you will find that your labor is as expensive as ours. I think that wherever the labor comes from, even if it comes from your own family, you should count it up the same as if it were hired.

The backbone of our laboring force is composed of men we know to be—may I use the word?—thoroughbreds in the market garden business. We keep these men the year round, pay them enough to satisfy them, see that they have good houses to live in, facilitate their fuel supply; where there are young children in the family see that they get fresh milk every day.—in other words apply the Golden Rule to that part of our force. We can also employ seasonal labor, and they will go and work with the experienced men of our force. With three or four men you can use one boy, and for the lighter duties, such as picking fruit, we use women if we can get them, as they are satisfactory for such work. That is the way we are overcoming the labor situation to-day.

Our Crop.

The first thing a manager should consider in the growing of proper crops is the location, soil, labor conditions and his market. For example, you might have land that is fairly heavy. If you try to grow the early crops on that land you will fall down, while you may make a success of the later crops and small fruits. If you have a large acreage you might use a rotation of crops. If your acreage is small you must use fertilizers and intensive cultivation, while if you have little labor in your district you must depend upon crops that can be cultivated with horses and machinery. Again, you must consider your markets, as they also have their eccentricities. Our market may take a purple tomato, but the Toronto market does not want it at all. I knew the value of Bantam corn long before our market did, but we could not plant it because the market did not understand it. And in spite of many teachings to the contrary, I do not think it is good business to try to educate your market. Give your market what they want, and when they are educated to another line give them that.

Having settled on the crops that will be best in your garden, it is very possible that you will find that there is one special crop to which your garden is particularly adapted. If your market is favorable to this crop, and the rest of your neighborhood possibly cannot grow it as well as you can, you have there a valuable asset. Study this crop particularly, spray it and care for it and become especially expert in growing it. For instance, we found for years that celery was weak on our markets, and it was shipped in from Toronto right in the celery season. We decided to specialize on celery, and although we knew very little about it more than the other crops, yet by studying it, finding out the fertilizers and sprays that were most suitable, etc., we have perfected our celery crop. Now, this is not an argument against diversity of crops. If you grow several crops, you not only have a greater chance in a year when some one crop is a failure, but also in a good year you have a better chance by not flooding your market with any one particular crop, which, if it is the one most suitable to your district, will probably be offered by other market gardeners as well.

There are some duties that the manager has to fulfil himself. The sowing of crops is one. I run a seed drill, and that is not easy work. It has to be done very carefully, as if a mistake is made in the seeding of your crop you cannot rectify it or may not even be aware of it until it is too late. If you know the quality and germination of your seed you can use it to better advantage; you can, on the one hand, sow thinly and use less seed, but if you do not know the quality you have to sow thickly to avoid chance of loss. Another thing to be watched is the spray. Too strong a spray would mean burning; too week a spray might mean blight.

We must take great care in the preparing of goods for the market, as the manner in which our goods appear on the market is to-day our only advertisement. Now, this leads to marketing, and so far we have not been able to get away from the marketing end ourselves. If you hand it over to the hired man, you have to be sure of his absolute honesty, or else do a lot of bookkeeping. In the second place, marketing requires adaptability, and under our conditions a great amount of energy, while in the third place it requires a good business man to attract and hold your trade. We have never been able to satisfy ourselves that we could successfully hand this over to any of our men and call it a good business transaction.

Our products, in common with many others, are sold largely upon their appearance and in marketing you must bear this in mind. Clean goods, well packed in clean packages, delivered in a clean and well kept outfit by a man with a clean shaven face and a clean shirt, are essentials to the proper marketing of our goods. If you want a good suit of clothes, you do not go to a store that has dirty, cobwebby windows and a slatternly salesman in a cheap suit inside; no,—if you want a good suit you go to the store with fine plate glass windows well cleaned, and a well dressed, alert salesman ready to wait on you. If you are selling first class goods, you have to make them look right, and then you will get good trade and a good price. But garden as well as you may, you will have different qualities of products. I can only speak from my own experience, but I would say that either in selling to the stores or the wholesale trade the main thing is an honest pack. If you have any poor goods, put them on the top. It will be a pleasant surprise to the buyer to find better stuff underneath, and it will be a good advertisement for you. If you are doing a strictly retail market trade, you can get an advanced price for particularly choice goods. If you have a poorer grade, sell them to a poorer trade at a smaller price. Never mix them with your best qualities.

The manager of a garden is generally the purchasing agent, and he has to keep track of the market. Three years ago we bought bluestone for our sprays, enough to last for the coming season, because we heard that that fall they were going to put up the price. Now, I think that the present is a bad time to buy glass, and we are getting along with as little glass as we can this year, as there may be a drop in price. The manager of a garden must watch his market. Last year, for instance, we thought it was rather a high price to pay $3.25 a bag for New Ontario potato seed, but that does not seem high this year. But that seed produced a crop that scored ninety-eight per cent. in the Toronto Exhibition.

If your machinery is becoming dilapidated it does not pay to send a man out to monkey with it. Buy new machinery. If your acreage is large enough, buy larger machinery. That of course would only apply to the large gardens. Where you have several horses and possibly a cow or two, you will find that your profits are being taken up in buying feed for them, and if you find that you can buy farm land at a reasonable price it will pay you to grow hay for your own stock. We have found this to pay.

It pays the manager of a market garden to be a student of his garden conditions; they are all different. When we first took over our garden it was one of the main blocks of land in the district. One end of it did not seem to do as well as the rest, and we thought we would build it up. We had manure drawn to it and nursed it around generally, but could not get results. Finally we used a fertilizer there that seemed to be just what it needed, and now that end is as good as the rest. On another block one end seemed to be light and friable and the other end heavy. I wondered over that difference for years, and sent samples of the soil to the Experimental Farms to be analyzed, but lately I discovered that a ledge of rock runs through that part which, of course, had its effect on the soil. It would pay you gentlemen to study the soil of your gardens and ascertain how to use it right for economic and profitable production. Our aim should be not just to get the most out of our land, but rather to build our business on the firm, solid foundation of the most economic possible production, so that we can give to our customers our produce at a price that they can afford to pay and still retain for ourselves a just profit.

CO-OPERATIVE SELLING.

J. G. FLEMING: Reporting for the Committee on Co-operation, I beg to say that this committee recommends that this Convention appoint one delegate from each local Association to take up the matter of co-operative selling with his own society, and to endeavor to accomplish something along that line.

Furthermore, we also move that the Convention recommend each delegate to take up the question of selling tomatoes to the canners, to find out what it costs us to produce the tomatoes and the price at which we can afford to sell them with the idea of ascertaining if it would be practicable to fix a uniform price to prevail over the Province.

The following delegates are recommended for this duty:—

Leamington: E. J. Atkins.
Blenheim: J. G. Fleming.
London: J. J. Davis.
Waterford: G. B. Hellerman.
Beamsville: Wm. Schultz.
Tecumseh: M. May.
Sarnia: T. Somes.
Blackwell: D. H. Sitter.
Sarnia Ind.: Hy. Broughton.
Kingston: W. J. Cooke.
Toronto: F. F. Reeves.
St. Catharines: T. L. Furminger.
Vineland: G. Fry.
Ottawa: T. M. Mulligan.
Peterboro: C. F. Kitney.
Welland: F. M. Lymburner.
Stratford: J. A. Humphries.
Stamford: Alb. Barbeau.
Belleville: T. W. Bamford.

The delegates who are not present at this Convention will be notified, and I may say that Mr. F. C. Hart will be at the disposal of any branch that wishes to have him explain co-operative selling to them.

Moved by J. LOCKIE WILSON, seconded by J. G. FLEMING, that the recommendation as read be adopted. Carried unanimously.

SOME RECENT WORK ON THE CONTROL OF THE CABBAGE ROOT MAGGOT.

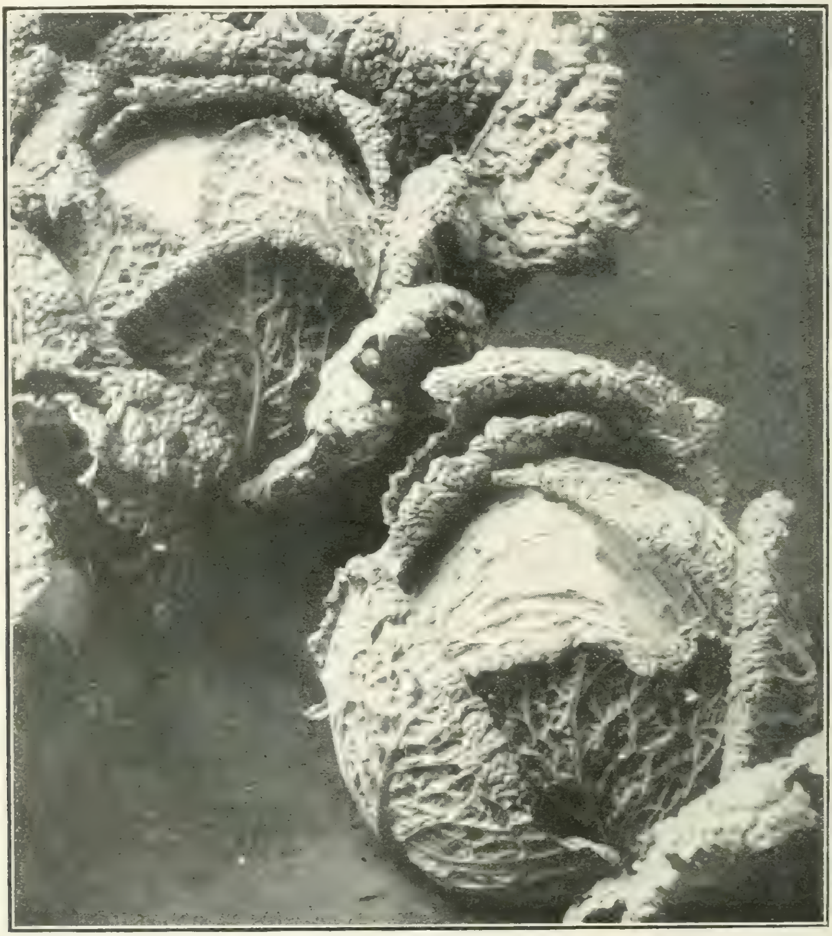
ARTHUR GIBSON, CHIEF, DIVISION OF FIELD CROP AND GARDEN INSECTS,
ENTOMOLOGICAL BRANCH, DEPARTMENT OF AGRICULTURE, OTTAWA.

During recent years the Entomological Branch of the Dominion Department of Agriculture has been making a special study of new control measures for such well known insects as the cabbage root maggot, the onion maggot, the Colorado potato beetle, the various kinds of surface feeding cutworms, etc.

Time to-day, however, will only permit us to discuss one of these insects, so with your permission I will tell you briefly of some of our recent work in controlling the cabbage root maggot.

In 1912 my colleague, R. C. Treherne, and I published a 58-page bulletin in which was discussed the life-history and control of this insect. Under the chapter on control we listed as many as 47 mixtures or protective measures with which we had experimented for several years. The large proportion of these mixtures or protective measures proved from a practical standpoint to be of little value in the control of root maggots. In fact, with a very few exceptions, we arrived at the opinion that the farmer or market gardener would be well advised not to make use of them as a means of controlling the ravages of this injurious insect. We further stated that the only protection to be relied upon for cabbages and cauliflowers, and one which is in every way practical, is in the use of tarred felt paper discs. The use of these discs, as many of you know, has certainly been found of value in many parts of Canada. For the reason chiefly, however, that gardeners did not care to take the time to apply the discs properly at the time cabbages and cauliflowers are planted out in the field, this particular measure has on the whole not been as popular among growers as it deserved.

Since the publication of our bulletin we have been testing the value of other remedies, and one or two of these it would seem have now passed the experimental stage, having been used with remarkable success under field conditions. Only one of these remedies will be referred to to-day, namely, the application of corrosive sublimate to the plants at definite intervals. Important experiments with corrosive sublimate have demonstrated its high value, and we, therefore, have to qualify our previous remarks which indicated that the only protection to be relied upon was in the use of the tarred paper discs.



"Savoy Cabbage."

In searching the literature (1) I find that in the *Country Gentleman*, 1864, it is stated that a contemporary recommended 1 oz. of corrosive sublimate dissolved in four gallons of water to destroy root maggots. Further, a correspondent to a Canadian journal—*American Cultivator*—for April 30, 1881, stated that all of the London market gardeners secretly used a solution of ¼ oz. of this substance in four gallons of water for these maggots. These early references indicate that corrosive sublimate as a remedy for the cabbage root maggot has been known for well over fifty years, and it is remarkable that its value has only been appreciated during comparatively recent years. The credit for bringing it again to the front belongs to the Ontario Department of Agriculture. During the past four years we have at Ottawa been giving the matter of the value of corrosive sublimate a good deal of attention, and it is of our work during 1918 and 1919, which I wish particularly to speak. In the former year 800 early cabbage plants were placed at our disposal by Mr. J. I. Farquharson. These plants were treated with corrosive sublimate in the strength of 1 oz. to four gallons of water on May 27, June 6, 14, and 23. The results from this experiment were very striking, 96 per cent. of the plants treated with corrosive sublimate being saved. It should be stated that in the same field in which the above experiment was conducted, the main cabbage plantation was destroyed by the root maggot to the extent of fully 60 per cent.

(1)—Slingerland M. V. Bull. 78, Cornell Univ. Agric. Exp. Station.

In 1919, however, we conducted a much larger experiment, Mr. Farquharson very kindly placing at our disposal his whole cabbage plantation of over 3,000 plants. This gave us an opportunity of testing out on a very much larger scale various strengths of corrosive sublimate mixtures, as well as other promising remedies. It is only, however, of the corrosive sublimate treated blocks which I will refer to to-day; of one experiment comprising 2,731 early cabbages of the varieties, Jersey Wakefield and Copenhagen Market, blocks of these consisting of 100 plants each, numbered 1 to 18, excepting blocks 2, 5, 8, 11, 14, and 17, which were left untreated to act as check-blocks, were treated with strengths of corrosive sublimate mixtures, varying as follows: 1 oz. in four gallons of water, 1 oz. in six gallons of water, 1 oz. in eight gallons of water, and 1 oz. in ten gallons of water, some blocks being given four treatments, others only three. The first application was made on the fourth day after the plants were put out in the field, the second application six days later, and one or two further applications ten days apart. I did not want Mr. Farquharson to run the risk of losing six hundred plants in the check blocks, so we reduced the number in each of the check blocks to from 20 to 36. Briefly, the results of this portion of the experiment were as follows: There was practically no difference in the blocks treated with the various strengths of corrosive sublimate. The weakest solution, namely, one ounce in ten gallons of water, gave as good results as did the strongest mixture of one ounce in four gallons of water. Three applications, too, are apparently equal to four applications. The percentage of plants destroyed by the maggot in these treated blocks ranged from no per cent. to four per cent., whereas the plants in the check blocks were destroyed to the extent of 52 per cent., 57 per cent., 61 per cent., 66 per cent., 70 per cent., and 80 per cent. respectively.

Under acre conditions it was estimated that the cost of treating cabbages with corrosive sublimate in comparison with the cost of applying the tarred felt paper discs is as follows:—

Corrosive sublimate—total cost per acre including labor and material:	
3 treatments	$24 21
4 treatments	32 28
Tarred discs—total cost per acre including labor and material	16 75

In order to determine the effect, if any, of corrosive sublimate on soil bacteria, bacteriological soil tests were made by an assistant, J. A. Flack, of:—

(*a*) Soil treated with corrosive sublimate, and

(*b*) Untreated soil.

Briefly, the data resulting from these experiments clearly indicated that the corrosive sublimate treatment showed no deleterious influence either upon the plants or on the relative number of soil organisms present in the treated versus the untreated soil. Under field conditions the applications of the corrosive sublimate mixtures certainly seemed to have a stimulating effect upon the growth of the plants.

GROWING GREENHOUSE VEGETABLES.

A. H. Walker, Macdonald College, Que.

When your secretary asked me to deliver an address on this subject I felt that while we have been growing vegetables at Macdonald College for a number of years, our operations have been on such a small scale that I doubted whether I could do the subject justice from the pure commercial standpoint.

At the outset, let me say that I am very optimistic regarding the future of this branch of greenhouse work. In pre-war times the demand for greenhouse vegetables in Montreal exceeded by far the local supply. Since 1914 with the high wages paid to all those engaged in the production of munitions and other materials for war purposes, the demand for fresh green vegetables out of season increased by leaps and bounds. Since the signing of the armistice we have been witnesses of the general unrest amongst the industrial workers who through their organizations have been demanding and obtaining a fairer share of the proceeds of their labor. The natural result of increased income is that a higher standard of living will result and we as vegetable growers may expect a still greater demand for our produce.

In this paper I have chosen to deal with lettuce, tomatoes, cucumbers and melons. Of first importance apart from the ability of the grower is the type of house best suited to the requirements of the crop being grown. It will be admitted by all that for the production of such crops as lettuce and tomatoes plenty of head room is essential, not only to prevent rapid changes in temperature but healthier conditions obtained owing to the greater volume of air, and a much higher temperature can be maintained during bright weather for the same reason. Separate houses are best, with top and side ventilation. Connected houses while economical to build and heat throw too much shade, especially after a snowstorm. In considering the forcing of most crops it is desirable that the temperature of the soil should be as high as overhead, that is to say, the soil should be given every opportunity to rise or fall in temperature according to temperature overhead. This being so the question arises as to how this may be brought about.

The raised bench is the best example in this connection, but these are out of the question when operations are on a large scale. My object in raising this question is to point out that even with the sandiest soils much healthier soil conditions would obtain if better aeration were provided. With solid beds this could be accomplished by means of drain tiles. We know of the benefits derived from under-drainage in field operations. When this is an acknowledged fact from an outdoor standpoint it surely must follow that it is just as necessary indoors. Granting that indoors the soil moisture is under control and as a result is never in a saturated condition, still we must remember that crops are being grown during the cold dull months with a comparatively low temperature as compared with outdoors during summer, hence the necessity for as warm soil conditions as possible without attempting applied bottom heat, which would be folly with such crops as lettuce, radish and cauliflower, but would be desirable in the case of tomatoes, melons and cucumbers.

LETTUCE.

The most important greenhouse vegetable is lettuce, not on account of the difficulties in growing, but on account of the enormous consumption. The type of lettuce grown locally for the Montreal market is the loose leaf or Grand Rapids, none of the growers attempting to produce the Head or Boston type. My remarks will apply to the former.

" Lettuce Growing for Winter Market.

SOIL: Lettuce requires a rich well drained soil for a quick growth. For preference a heavily manured sandy loam is best; good crops, however, can be grown on a variety of soils.

If lettuce is grown exclusively it is possible to take off four crops by catering to an early fall and late spring trade. This is not good practice as the bench space would be idle all summer, it being too late for tomato or cucumber planting.

Records were kept at the College to determine length of time taken to develop marketable heads, the early fall and late spring crops taking 72 days, the midwinter 138 days. Making allowance for time in seeding and pricking off benches it was possible to grow four crops.

The usual procedure with the large growers is to sow seeds in rows on a raised bench, prick off to same type of bench three inches apart, planting from there to solid bed, six inches apart.

WATERING: With leaf lettuce this is done overhead, and with the early fall and late spring crops little care need be taken, but during the dull months water should be carefully applied, wetting the plants as little as possible. This should be done early in the day during bright weather so that plants may dry quickly.

Carelessness in this regard may cause mildew or rot, especially if combined with a high temperature.

TEMPERATURE AND VENTILATION: Night temperature should be 45 deg. to 50 deg., depending on weather conditions. During the day this may be considerably increased by sun heat, especially if houses are lofty. Proper ventilation is an important factor in controlling disease as well as maintaining a proper temperature. During sunny weather air should be freely admitted, providing cold draughts are avoided.

INSECTS: Green aphis is most troublesome. These are controlled by tobacco fumigation or by evaporating nicotine. White Fly is troublesome at times if tomatoes are grwn on the establishment. These are controlled by hydrocyanic acid gas.

DISEASES: Mildew is the most troublesome. Plants showing mildew should be carefully removed and the patch of soil dusted with fresh slacked lime. Careful watering, heating, and ventilating are the best means of control. Rot is another fungus disease which may be troublesome and is controlled by the same means as mildew.

Head lettuce was experimented with here, but the loss caused by drip from the glass during mild days following severe weather, proved that for this northern climate it was not a safe proposition, excepting possibly as a late spring crop.

TOMATOES.

The tomato may be given second place amongst forced vegetables. The general public has acquired such a taste for greenhouse tomatoes that the demand far exceeds the local supply for the Montreal market. Good prices are obtained throughout the entire period when it is possible to supply them in paying quantities. In order to make this a paying crop under forced conditions a wise selection of varieties should be made. Many bulletins have been issued which when compared are very misleading. One bulletin will place one variety away ahead of a variety which in another bulletin has taken first place. Many factors have to be taken into account in considering such reports, as for instance, the section of this continent where the tests were made, and also the period covered by the growth of the plants. Markets may also be a determining factor. Some of the bulletins I have read show that the tests were made with a late spring crop where ideal conditions obtained during the major portion of growth. With such conditions any variety will produce in proportion to its bearing outdoors, hence the reason why some varieties are, according to tests made at the College, very inferior as a forcing variety. We have grown tomatoes at the College for the past twelve years, and during that time have tested out a great many varieties. In the early years our mainstay was Comet, which formed the bulk of the area planted. Amongst the ones being tested we discovered that Livingston's Globe gave promise of rivaling Comet, with the result that we planted a house with an equal number of each under the same conditions. Records were kept which proved that Globe equalled Comet as a producer and surpassed it in the quantity of marketable specimens. Since that time we have grown Globe exclusively with the exception of a few odd varieties being tested. Many object to Globe because it is not a red variety. The growers for the Toronto market object to it particularly because the fruit is too large. The Montreal market, however, does not seem to care about size, in fact, the Montreal people want tomatoes for slicing and prefer fair sized specimens for the purpose; hence the reason why the growers in this vicinity plant Globe. This variety has an ideal habit of growth, the leaf starts are far enough apart thus offsetting the necessity of removing any of them to admit light, while the foliage is not too heavy. It is a heavy cropper, the fruits being very regular in shape, with but few small fruit that cannot be shipped, whereas with other varieties tested the amount of waste in this respect was out of proportion even with so-called good varieties. Comet is an example of this. Records were kept of this variety to determine its productions when planted commercially. One house was planted for fall and early winter fruiting and produced 1,900 lbs. The plants to produce the spring and early summer crop were planted in the same soil which had been sterilized, and produced 1,700 lbs., or a total of 3,600 lbs. The bench area planted was 718 sq. ft., thus the weight per sq. ft. was over 5 lbs.

"Growing Cucumbers Under Glass."

The majority of greenhouse vegetable growers grow this vegetable only as an early summer crop following lettuce, but as there is a demand at good prices for tomatoes during the entire year it might be well for some of the growers at least to cater to this trade. Our system at the College has been to have our first fruits ripening about the 15th of October, the crop lasting until the first or second week in January. The same houses are replanted and picking commences again third week in April, continuing until July. You will notice that there is a period of three months in which no fruit is being produced. To fill this gap fruit would have to be set during the dullest months of the year, November, December and January, and in this part of the country it is practically impossible to obtain a setting of fruit in sufficient quantities to make it pay. To complete the season until fruit from field is available another house is planted following third crop of lettuce or violets. In order to produce these crops at the times stated the seeds are sown as follows: For fall and early winter, seeds are sown June 25th. Spring and early summer crop October 25th. Summer Crop December 20th. For the fall crop the seedlings are pricked off into boxes 4 in. apart and planted direct from the boxes to the bench. The seedlings of the second crop are pricked off 3 in. apart in boxes and later potted into 3 in. pots which carry them nicely until benches are available. The plants for the summer crop are carried along in 4½ in. pots until third crop of lettuce or violets is finished.

Soil: For preference a good sandy loam is best but experience has shown me that good crops can be grown on a variety of soils providing that good drainage is given. Sandy soils give better aeration and dry quickly on the surface which is important in the control of Mildew or Leaf Mold. At the College the crops for the most part are grown on either raised benches or raised beds which allow a depth of from five to six inches for soil. The soil grows two crops. If this soil has been composted from a fairly good sod, very little manure is added as the presence of an excess of manure is apt to cause very rank growth in the early stages. For the second crop, however, a heavy dressing of manure is given or a liberal supply of bone meal, the plants later being given commercial fertilizer or liquid manure. With permanent soils annual applications of stable manure will usually be sufficient, but should the growth indicate the need of additional plant food, liquid manure, mulching of manure, or a quickly available commercial fertilizer may be given.

Benches vs. Solid Beds: For the two main crops which pass the half of their period of growth during the cold months of the year I prefer benches for reasons already given. For the late crop the solid bed is best for the reason that the soil is usually of greater depth, requiring less frequent watering, especially during summer weather.

Planting Distances: Experiments were conducted here for several years to arrive at something definite. We found that from a commercial standpoint 18 to 20 inches apart gave the largest yields per sq. ft. The fall crop is spaced 18 in. apart as excellent weather conditions obtain during the setting period. The spring crop is spaced 20 in. apart on account of the less favorable conditions during the early period of growth.

Staking and Training: Strong wire stakes stiffened by two comparatively thin longitudinal wires, one-half way up, the other near the top, give excellent support, but possibly the simplest way is to use binder twine fastened to longitudinal wires, near the base and overhead. Each plant is trained to a single stem, laterals being removed as soon as large enough to handle. When the desired height has been reached, which in the case of a fall crop, followed by spring crop, should not exceed 6 ft. the top is broken off. Leaf pruning should be practised to the extent of reducing shade and to allow for a circulation of air. This leaf pruning should not be carried to excess as maximum yields depend to a marked extent upon amount of foliage retained.

Pollination: This is a very important matter, and must receive proper attention if maximum yields are expected. The best means of distributing the pollen grains is by using a rabbit's tail or piece of similar fur. Attach this to a similar stake and go from truss to truss with the fur; in this way the pollen is carried from stamens to pistil. This should be done at noon or after noon hour. In order that conditions be favorable for pollination, the air in the house should be as dry as possible. All watering should be done early in the morning if possible, or soon after pollination.

WATERING: Proper watering is an important factor in regulating plant growth. After plants are set in the beds, the soil immediately surrounding each should receive water, the area watered being increased as growth demands it until a watering of the entire bench or bed is necessary. Subsequent watering when this is necessary should be thorough. Care should be exercised in watering during the period of pollination; this should be done early in the forenoon on bright days in order that the air may be dry enough for pollination at noon or immediately after. Watering at all times should be so regulated that it is done early enough on bright days so that ventilation may be given to decrease the humidity. In brief, as dry atmospheric conditions as possible at all times should be the aim.

TEMPERATURE AND VENTILATION: The temperature maintained by the heating system should be as even as possible. Sudden changes one way or the other will weaken the plants and cause them to be more susceptible to disease. We have found that for our climate a night temperature of 58 to 60 degrees is best; this temperature is maintained during dull or very cold weather. During fine weather the day temperature may be increased five degrees by fire heat before ventilation is given. Ventilation should be very carefully given during cold weather, especially if there is not much head room from plants to ridge. During fine mild weather abundance of ventilation should be given.

INSECTS: Green aphis are sometimes troublesome and are controlled by tobacco fumigation, evaporated nicotine, or spraying with nicotine solution. White Fly is very troublesome, and unless kept in check will cause considerable damage. A sticky substance is exuded from the larva and pupa which falling upon the upper surface of the lower foliage gives it a shiny appearance. A dark fungus growth forms on this substance which hastens the destruction of the leaves already weakened by the White Fly or Leaf Mold. The only effective means of control is by fumigating with hydrocyanic acid gas. This gas is produced by combining potassium cyanide, sulphuric acid and water in the following proportions:—

Potassium cyanide	¼ oz.
Sulphuric acid	½ oz. to 1,000 cubic feet.
Water	1 oz.

A clear still night should be chosen with dry interior conditions.

NEMATODES OR EEL WORM: This is a minute worm which enters the roots, lives on the cell sap and causes the formation of galls on the roots. If the worms are numerous, the plants attacked become weakened and when badly infected usually die before they ripen any fruit. The only known means of control is steam sterilization. Numerous devices are used for applying the steam to the soil. The method adopted at Macdonald College is to lay 3 in. drain tiles in rows 18 in. apart and as deep as the drainage materials will allow. The soil is levelled over, firmed down by walking over it, watered and covered with several thicknesses of newspaper to keep steam in soil as much as possible. Steam is then let into the tile by making a connection on the heating system. This is left on from 2½ to 4 hours according to type of bench. This method, while not perfect, is satisfactory.

DISEASES: There are a number of diseases which tomatoes are subject to, any of which may cause considerable trouble and possibly loss.

LEAF MOLD: This is a fungus which appears on the underside of the leaves in the form of a white velvety mold which later changes to a greyish brown color. As their size and number increase the whole leaf loses its color, curls up and dies. This disease, though common in some parts of this continent, is new to us here. It made its first appearance on the fall crop of 1918. This year again it made its appearance and I was at a loss to know what to do, but as it was a fungus, the plants were immediately dusted with flowers of sulphur to which a little lime was added to make the sulphur stick. This did not seem to check it a bit with the result that the crop was rather a poor one. Careful watering and ventilation combined with steady temperature are possibly the best means of preventing this fungus. Spraying with Bordeaux mixture is recommended by some but with doubtful results.

FUSARIUM WILT: This has not been serious with us. The plants affected by the disease show a yellowing of the lower foliage which spreads upward. The plants finally wilt and die. Steam sterilization of the soil and the removal of affected plants before spores are produced is the surest means of controlling this disease.

TOMATO MOSAIC: Plants affected by this disease show pale green patches amid the normal green of the leaf, giving the foliage a mottled appearance. Badly affected plants drop most of their blossoms. Very little is known as to the cause and control. Some authorities suggest that the disease may be spread in pruning operations.

CUCUMBERS.

As my experience in growing this crop in this country has been limited and being dissatisfied with the cultural methods I have seen, I decided to treat the subject from the English growers' standpoint. It is always desirable to know how other people do things as some point may be brought out which might be applied to improve our methods here.

TYPE OF HOUSE: The type of house considered most suitable for both cucumber and melon forcing is narrow and low, known as pits. These pits are from 10 to 12 ft. wide and 9 to 10 ft. high inside, with a raised bed of convenient height on either side with path in centre. These beds are constructed after the fashion of a propagating bench and supplied with bottom heat which is under control. In order to train the growth wires are stretched lengthwise 18 in. from the roof through eyebolts at intervals of 9 in. between wires. The houses are provided with both top and side ventilation.

SOIL: A suitable soil should contain abundance of plant food, be retentive of moisture and drain freely. Rotted sod and well rotted manure in the proportion of three to one with sufficient gritty material as gravelly sand to drain this will answer well. This is placed on the bench in the form of a mound.

SOWING OF SEEDS: Like all members of this family, the cucumber does not take kindly to being disturbed, hence seeds are either sown in square pieces of turf or in pots and placed in a warm, moist house, temperature 75 to 80 deg. When sufficient roots have formed to hold soil well together they are planted in the benches.

DISTANCE BETWEEN PLANTS: The natural habit of growth of all members of this family is to ramble, and any system of training which severely restricts this habit is detrimental. This is true of the English type, and this is the type we will consider. The plants then are set eight feet apart.

TRAINING: A short stake is set to each to take the growth to the first wire. When plants are 18 in. long or thereabouts the top is pinched off. The resulting laterals are trained along the wires to right and left, and one is taken straight up to continue the main stem. This in turn is pinched and finally the top of the house is reached. In the meantime, the lower laterals are trailing along and developing fruits, these laterals being stopped when they slightly overlap the lateral of the neighboring plants. In order to simplify and bring out clearly the system of training followed by the English growers let me take one of these laterals as an example. The lateral is limited to a length of say 4 ft. by overlapping a little. While it is covering the distance a sublateral will be developing at some point near the main stem, this is tied in loosely alongside the lateral. While this is happening, the first fruit is developing rapidly and possibly before the sublateral reaches the point where the fruit is, the fruit has been cut. The foliage on the lateral in the meantime being gradually removed to allow of better light condition to the sublateral, this is followed up until all fruits are cut. The lateral is then removed by cutting it back to the point where the sublateral springs from. This method is repeated throughout the season as there is always plenty of growths to introduce.

TEMPERATURE AND VENTILATION: By night 70 deg. are maintained with an increase of 5 deg. by day with fire heat. This may be increased a few degrees by sun heat before ventilating. Ventilation is given freely during fine weather consistent with the degree of humidity which must be maintained.

WATERING, SYRINGING AND HUMIDITY: There is an old saying amongst gardeners that you cannot drown a cucumber or roast a melon. The soil is kept uniformly moist but not in a saturated condition. Vigorous syringing with a fine spray early in the forenoon and again in the afternoon is necessary to keep Red Spider and Thrips in check. When afternoon syringing is done the house is closed down to box up a little, but chiefly to make conditions as uncomfortable as possible for Red Spider and Thrips by the high degree of humidity. By day during fine weather frequent dampenings of the floor and surface soil are necessary to maintain the necessary humidity for a healthy growth.

FEEDING: The cucumber is a gross feeder. This may be given in the form of a liquid manure, or by a topdress of soil similar to bench soil heavily enriched with manure, this form of feeding being repeated as necessity demands.

POLLINATION: It is well known that the fruits of the English types develop without pollination; staminate flowers, however, are in abundance, these are removed before the flower opens or as soon after as possible.

INSECTS: The Red Spider and Thrips. Controlled by vigorous syringing and by humid conditions. White Fly. Controlled by hydrocyanic acid gas.

DISEASES: *Mildew.*—Controlled by careful airing, even temperature. Dusting flowers of sulphur or by fumes from sulphur placed on heating pipes.

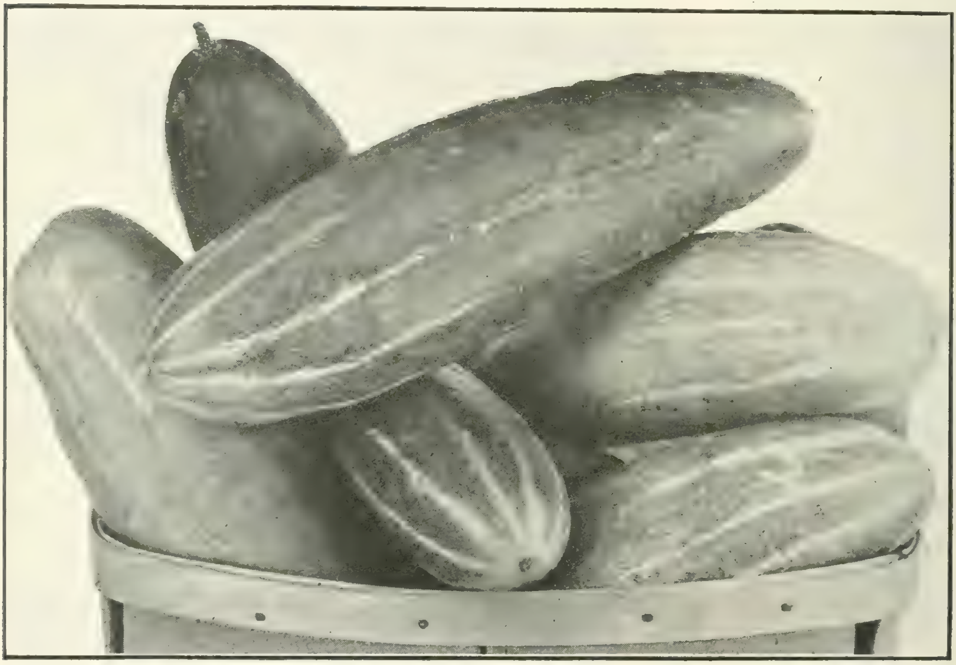
MELONS.

This crop has been almost entirely neglected by commercial growers. I will not attempt to explain why. I am satisfied, however, that melons would be bought up quickly if produced to supply the market during June, July and August before the frame crop comes in. One commercial concern near Montreal had such a crop some few years ago, and the grower told me that it turned out the best paying crop on the place.

We have grown them at the College, and the difficulty we experienced was in supplying the local demand. I will outline the culture of this plant as it is handled on private establishments, leaving the commercial grower to modify it as suits his conditions.

TYPE OF HOUSE AND BENCHES: The type of house and benches best suited to its culture is the same as mentioned in connection with cucumbers. The method of seeding is also similar.

SOIL: Well rotted sod of a loamy texture is considered best. This is cut up roughly with the spade, a little bone meal and sand being added if the texture or quality of the loam requires it. No animal manure is added as this encourages rank growth which is not desirable in the early stages of growth. The soil is placed on the bench in the form of a mound for the purpose of having as dry conditions around the neck of the plants as possible to prevent a disease termed "corking" or stem rot which is apt to develop under wet conditions. This is considered so important that many growers use collars which are circles of earthenware on top of mound to set plants in.



White Spine Cucumbers.

PLANTING AND DISTANCE APART: Under the system of training practiced, the plants are set 2½ ft. apart, watered, sprayed with syringe and the house damped down. If ventilation is desirable this is given sparingly until young plants become established.

TEMPERATURE AND VENTILATION: A night temperature of 70 deg. is maintained, with an increase of 5 deg. during the day by fire heat. By sun heat 80 deg. may be reached before ventilating, providing a proper degree of humidity is maintained.

With early and late forcing the question of ventilation during unfavorable weather has to be considered, especially during the setting and ripening periods. For this purpose the ventilator is opened slightly for a part of the day and the desired temperature maintained by fire heat. During fine weather, however, abundance of ventilation is given consistent with outdoor conditions and the degree of humidity desired at different stages of growth.

WATERING AND SYRINGING: Plants growing in such a high temperature take a lot of water, especially after the plants have covered the space allotted to them and fruits are swelling. A soggy condition, however, must be avoided. Where collars are used the first four waterings are given inside these, after which water is kept away from the neck of the plants for reasons already mentioned. When fruits are ripening a gradual drying out of the soil is desirable to flavor and finish. Vigorous syringing to keep Red Spider and Thrips in check is given morning and afternoon during bright weather with frequent damping of the surface soil and paths during the day. The house is closed down when afternoon syringing is done to box up a little natural heat and make conditions uncomfortable for Red Spider and Thrips on account of the humidity created.

FEEDING: This is given in the form of liquid manure or topdressing of loam heavily enriched with manure.

TRAINING AND POLLINATION: There are three methods of training, namely, the one stem carrying two fruits, the two stems carrying four, and the one stem carrying four. The two former I have had little experience with, therefore I will deal with the latter which is the one practiced by old country growers.

The main stem is taken up the wiring to the top of the house, which in houses such as have been described in connection with cucumbers would give a length of 8 ft. or thereabouts. In the meantime the laterals on which the fruits form are growing rapidly.

The natural habit of the plant is to produce one pair of laterals after another until the top of the house is reached, each pair developing its pistillate flowers in advance of the next pair. Since this is the case it is almost impossible to obtain sufficient pistillate flowers in the proper stages of development to ensure a crop unless some of the laterals are manipulated in such a way that this is brought about. This plant, although related to the cucumber, is totally different in bearing habit. The cucumber produces an uninterrupted supply of fruit covering the period of its growth. The melon season lasts but a short time, thus proving that all fruits must have been set about the same time. This is exactly what happens, as for instance, if one pair of flowers are pollinated to-day and another pair two or three days after, the result is that the first pair takes the lead and seems to drain the whole plant, the others failing to develop. To guard against this the lower two or three pairs of laterals are pinched back at the first leaf. This encourages sublateral growth, and by the time some of those produce pistillate flowers some of the laterals in the upper reaches of the plant will be in the same stage. All four are then pollinated together, thus making possible a crop of four fruits to a plant.

SUPPORTING FRUITS: As fruits hang suspended from the wires some support is necessary. Fish nets cut into squares with a stout cord at each corner tied to the wiring make the best possible support.

SUCCESSFUL CAULIFLOWER GROWING.

T. M. Mulligan, Ottawa.

My experience on the growing of cauliflower is limited as I do not attempt to grow the early crop, my land being a heavy clay loam which is slow in warming up in the early part of the season.

Cauliflower being one of the most popular, as well as profitable market vegetables when successfully grown, it will be readily understood how important it is to properly understand its nature and requirements so that it may be produced in as perfect and attractive condition as possible. It is wonderful what results may be obtained from a heavy clay-loam soil by careful cultivation, drainage and fertilizing.

But cauliflower being what may be termed a refined vegetable, is somewhat exacting and will not do its best unless the soil is suitable as to nature, tilth, and adaptability to retain moisture without soggyness.

My own experience has convinced me that the ideal soil for growing cauliflower is a cool deep clay-loam free from hardpan and such as will readily permit heavy rains or overhead watering to drain into the soil and not remain long on the surface to cause sourness in the soil or ailment to the growing plant. I fertilize very heavily some forty to fifty tons to the acre and plow it down in the late fall of the year. The following spring I apply about one-half ton of 16 per cent. acid phosphate to the acre, and keep the ground thoroughly disced until the plants are ready for transplanting, which is generally about the 15th of June.

I sow my seed in cold frames between the 1st and 10th of May. Before sowing the seed I incorporate in the soil Vaporite, which creates a strong odor which keeps away the fly which is responsible for the destructive root maggot. Cauliflower plants are much more tender and delicate than cabbage plants, and require greater care in handling,—indeed, care should be exercised from the time the seed is sown so that set backs of any kind to the plant during its growth may be avoided. Such checks are sure to cause an irregular growth or what is known as buttoning, which frequently happens.

To have perfectly white cauliflower heads the leaves must be drawn together and tied with twine when the flower is about the size of a hen's egg.

Some growers just break the leaves over the flower when about half grown, but this system is not thorough.

Cauliflower is the one plant that seems to require some artificial means of watering, especially during July and August. This is where overhead irrigation counts, because without it you seem to get a hit or miss crop.

I would, in conclusion, place as great emphasis as I can on the value of good seed. The very best cauliflower seed obtainable should be used, as without this you cannot grow the best cauliflower, and this holds good of all vegetables.

WORK OF MASSACHUSETTS VEGETABLE EXPERIMENTAL STATION.

H. F. Tompson, Head of Dept. of Vegetable Gardening, Massachusetts Agricultural College.

I feel it a privilege and an honor to be invited here to speak to you. I bring greetings from the States and particularly the vegetable growers of the State of Massachusetts.

After the wealth of oratory and good fellowship that has greeted you, I hesitate to turn to the practical details that my subject involves. However, I have been asked to tell you about the special work that we are conducting for vegetable growers in Massachusetts. I know that some of you are deeply interested in a like plan. If I can be of assistance it will give me great pleasure.

Back in 1911 and 1912, some of the Massachusetts vegetable growers awoke to the fact that, while Massachusetts was spending large sums of money on her Agricultural College and Experimental Station, little of the results of this work seemed applicable to their business. Accordingly, through our big Boston Market Gardeners' Association, a concerted demand for special attention to this work was made to the Agricultural College trustees. According to the scriptural "Ask and ye shall receive," a special effort was made by the college to meet this demand and make available to the market gardeners of the State the results of past experimental work and the assistance possible from new developments.

In 1914, I was asked to give special study to this field, to determine the problems requiring attention and the best means for their solution. After several months of direct contact with growers and a survey of the field, we concluded that the most efficient way to give the service needed would be to establish a small experimental and demonstration farm within easy reach of the majority of the growers of the State, under conditions similar to theirs.

In 1916, the President of the Boston Market Gardeners' Association introduced a bill into the State Legislature, requesting the necessary funds to purchase and equip a suitable small farm. Only $8,000 was granted the first year. With this, land was purchased and improved, at an initial cost of $400 per acre, and an additional cost of $125 per acre for drainage and other permanent improvements.

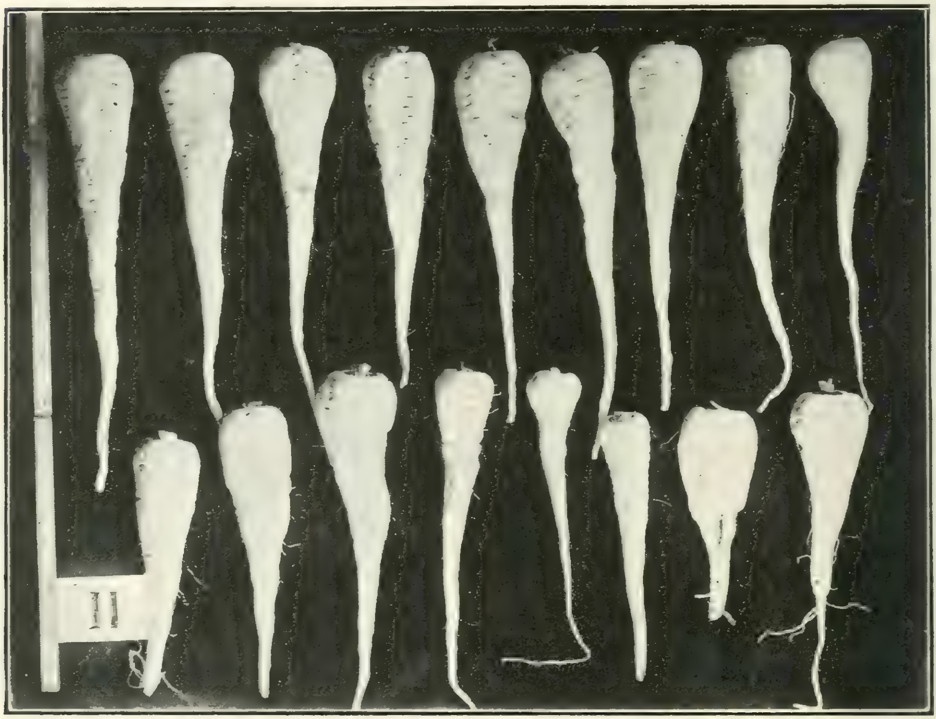
In 1917, 1918 and 1919, the market gardeners of the State actively supported further requests to the legislature until all have now been granted. The Market Garden Field Station, as this experimental farm is called, is under the control of the Massachusetts Agricultural College and is a part of the equipment of the Department of Vegetable Gardening. Its building equipment consists of a service building, wagon and tool shed, four greenhouses, each 40 ft. x 75 ft., and a cottage for the foreman.

As soon as the land was acquired, work began, but the season of 1918, saw the beginning of real investigational work and demonstration projects. In order to make clear the type of work being done, I believe you will appreciate a brief outline of these projects, some of which will be continued year after year. Our first is a limited variety test, designed to show the comparative performance of leading varieties of the most important vegetables, under similar conditions of soil and treatment. For instance, one market gardener may consider Wardville Kidney Wax Bean the best variety of this type. If he can see six or eight of the best kinds, side by side, he may learn what may be of distinct value to him. We have had the following vegetables under test:

Beans.
Cabbages.
Carrots.
Sweet Corn.
Onions.
Peppers.
Spinach,
Turnips.
Beets.
Cauliflowers.
Celery.
Lettuce.
Parsnips.
Radishes.
Tomatoes.

Project Two, consists of a test of Martha Washington Asparagus, that new variety developed in Massachusetts through federal aid, resistant to rust and of high market quality, one-quarter acre is used for this purpose.

Our third, and most important project is what we call a "Manure Economy Test." Many market gardeners have depended almost solely on stable manure to maintain the fertility of their farms. The ever decreasing supply and increasing demand have resulted, as usual, in higher and higher prices. We must find a substitute. We are working in that direction. We have ninety different plots, each 1/40 acre in extent, so arranged and treated as to show the effects of different combinations of manure, commercial fertilizer and green manures. During the first two years of this test we already have evidence pointing to the false economy of the use of manure alone. Two or three more years will add materially to the evidence in hand and we hope that field results will indicate the wise and profitable method of substitution, being made necessary through changing conditions.



Hollow Crown Parsnips.

Cabbage maggot control, a problem to which your own entomologists have been giving special attention has had a place in our programme during the last two years. In 1918, we obtained over ninety per cent. control where our check plots showed 50 per cent. loss, at a cost of not over $20 per acre, figuring 7,000 plants per acre and tar felt discs at $2 per thousand. We used the tar felt disc with a round hole in the centre which fits closely about the stem of the plant, and we applied the discs immediately after setting the plants. In 1919, we used a different type of disc cut to several points, in the centre. This was more difficult to apply properly and gave very poor control. The use of the disc with the round hole in the centre gave efficient control on farms of the Boston district in 1919. This seems to indicate clearly the importance of attention to this detail.

I don't want to tire you with a recital of too much detail and will briefly indicate other lines of work and conclude. Experiments with celery blight have shown that we can control this disease after it appears by thorough spraying with freshly made Bordeaux mixture and the 5-5-50 formula has given us best results.

We grew seeds from carefully selected stocks in 1918. I located the best beets, carrots, onions and parsnips I could find,—and we grow some good stock in Massachusetts, which is the home of the Danvers carrot and Danvers onion. These yielded well. In 1919, a test of this seed showed it superior in yield and quality to any other seed we had, with one exception. That exception was onions and our seed showed better color, shape and keeping quality, but a lower yield. Our carrot seed, planted July 8th, in competition with seven other kinds, yielded more than 100 bushels per acre over its nearest competitor, when harvested on November 17th. If this improvement is possible through such a short time and at as comparatively small an expense, we need to look sharply to our seed supply and take measures to insure its quality. High quality seed at any price is economy. Our seedsmen are working hard to improve quality. When they can assure us of it, we will do well to be willing to pay them the price.

We have conducted tests of some twenty different strains of celery; demonstrated the comparative value of new, highly advertised fertilizers. One of these is the product of a Maine quarry ground to a fine powder and sold at from $15 to $20 per ton, which had a plant food value of about 50c per ton. Time will not permit more detail.

VEGETABLE EXPERIMENTAL STATION.

The plan for the Experimental Station was submitted as follows:—

AN EXPERIMENTAL FARM FOR ONTARIO.

10 acres:

3 acres commercial.

2 acres semi-commercial.

5 acres experimental.

2½ acres to be used as a commercial garden. Planted as such and all remedies to be applied as if by a commercial gardener.

2½ acres where worth while, newer varieties from the test plots could be tested out in comparison with our present ones on a commercial scale.

5 acres devoted to variety tests; new methods of control of fungus diseases and insect pests. Plant breeding. Fertilizers. Green manures.

Greenhouses:

2—20 x 100 x 7.

2—40 x 150 x 8.

1 to be run commercially.

2 for experimental work.

1 for plant production and bedding plants.

Board to be composed of commercial growers actually carrying on business.

Need of Experimental Station:

1. Nothing very much done so far in vegetable work. Vineland up to this year has had unsuitable land. Is also too hard to get at. Guelph is occupied too much with teaching; soil unsuitable.

2. Station should be where gardeners can get to easily, so that they will visit it often and become familiar with its work. In the section giving conditions most generally suited to those of the majority of gardeners.

The name of Mr. W. J. Cooke was added to the Committee.

F. F. REEVES: I do not think we have ever had a better Convention than this, and I have attended every one since the first. I have, therefore, much pleasure in moving a vote of thanks to the President and all the members of the

Ottawa Branch who have entertained us so well, and I hope that we will live to come back here again and be as well entertained as we have been to-day.

The motion was seconded by J. J. DAVIS, and carried unanimously.

A banquet was given by the Ottawa Branch, at which all the delegates and speakers were present.

The Convention was brought to a close with the singing of the National Anthem.

PRIZE WINNERS IN FIELD CROP COMPETITIONS, 1919.

DISTRICT NO. 1.

Prize.	Name and Address.	Branch.
CABBAGE:		
1	I. A. Farquharson, Aylmer, R.R. 2	Ottawa.
2	C. F. Kitney, Peterboro, R.R. 11	Peterboro.
3	Jno. Baker, Cataraqui	Kingston.
4	Cooke Bros., Cataraqui	Kingston.
5	R. H. Wright, Aylmer, Que.	Ottawa.
6	Jas. Cox, Ottawa, R.R. 1	Ottawa.
CELERY:		
1	Cooke Bros., Cataraqui	Kingston.
2	C. E. Post, Brighton, R.R.	Odd.
3	Geo. Harris, Belleville	Belleville.
4	T. M. Mulligan, Harbord	Ottawa.
5	Jno. Baker, Cataraqui	Kingston.
6	Wm. Trick, Ottawa	Ottawa.
MELONS:		
1	Wm. Trick, Ottawa	Ottawa.
2	Jas. Cox, Ottawa, R.R. 1	Ottawa.
3	Jno. McMullen, Cumming's Bridge	Ottawa.
4	Jno. Baker, Cataraqui	Kingston.
5	Cooke Bros., Cataraqui	Kingston.
ONIONS:		
1	Geo. Riley, Aylmer, Que.	Ottawa.
2	Wm. Trick, Ottawa	Ottawa.
3	I. A. Farquharson, Aylmer, R.R. 2	Ottawa.
4	C. McConnell, Aylmer, Que.	Ottawa.
5	Jno. Baker, Cataraqui	Kingston.
6	Cooke Bros., Cataraqui	Kingston.
POTATOES:		
1	Cooke Bros., Cataraqui	Kingston.
2	Frank Wise, Peterboro	Peterboro.
3	B. Lancaster, Cataraqui	Kingston.
4	Jno. McMullen, Cumming's Bridge	Ottawa.
5	W. J. Oke, Peterboro	Peterboro.
6	Wm. Dempster, Aylmer, Que.	Ottawa.
TOMATOES:		
1	Jno. McMullen, Cumming's Bridge	Ottawa.
2	Wm. Trick, Ottawa	Ottawa.
3	Geo. Harris, Belleville	Belleville.
4	Cooke Bros., Cataraqui	Kingston.
5	B. Lancaster, Cataraqui, R.R. 1	Kingston.
6	Wm. Dempster, Aylmer, Que.	Ottawa.

DISTRICT NO. 2.

Prize.	Name and Address.	Branch.
CABBAGE:		
1	J. J. Fee, St. Catharines	St. Catharines.
2	H. M. Rittenhouse, Beamsville, R.R. 1	Clinton and Louth.
3	J. H. Rittenhouse, Vineland Station	Clinton and Louth.
4	Gordon Fry, Vineland Station	Clinton and Louth.
5	E. P. Dietch, Beamsville	Beamsville.
CELERY:		
1	Geo. McCalla, St. Catharines	St. Catharines.
2	L. R. Martin, Vineland Station	Clinton and Louth.

Prize.	Name and Address.	Branch.
MELONS:		
1	Jas. Taylor, Beamsville	Beamsville.
2	Thos. Fee, St. Catharines, R.R. 2	St. Catharines.
3	Chas. Hemingway, St. Catharines, R.R. 2	St. Catharines.
4	W. M. Culp, St. Catharines	St. Catharines.
ONIONS:		
1	H. M. Rittenhouse, Beamsville, R.R. 1	Clinton and Louth.
2	Edwin Secord, St. Catharines, R.R. 2	St. Catharines.
3	Thos. Fee, St. Catharines, R.R. 2	St. Catharines.
4	J. J. Fee, St. Catharines, R.R. 2	St. Catharines.
5	R. Pierson, St. Catharines, R.R. 2	St. Catharines.
POTATOES:		
1	H. M. Rittenhouse, Beamsville, R.R. 1	Clinton and Louth.
2	Wm. Belter, Beamsville	Beamsville.
3	Jas. Taylor, Beamsville	Beamsville.
4	W. S. Eborall, Beamsville	Clinton and Louth.
5	L. R. Martin, Vineland Station	Clinton and Louth.
TOMATOES:		
1	Chris. Fretz, Vineland Station	Clinton and Louth.
2	S. H. Rittenhouse, Jordan Harbour	Clinton and Louth.
3	Gordon Fry, Vineland Station	Clinton and Louth.
4	R. Pierson, St. Catharines	St. Catharines.
5	J. H. Rittenhouse, Vineland Station	Clinton and Louth.
6	W. S. Eborall, Beamsville, R.R. 1	Clinton and Louth.

DISTRICT No. 3.

Prize.	Name and Address.	Branch.
CABBAGE:		
1	Fred. May, Tecumseh, R.R. 1	Tecumseh.
2	V. Robinet, Tecumseh, R.R. 1	Tecumseh.
3	Phil. May, Belle River, R.R. 1	Tecumseh.
MELONS:		
1	Louis Tino, Tecumseh, R.R. 2	Tecumseh.
2	V. Robinet, Tecumseh, R.R. 1	Tecumseh.
ONIONS:		
1	Geo. Stone, Tecumseh	Tecumseh.
2	V. Robinet, Tecumseh	Tecumseh.
3	Maurice May, Tecumseh	Tecumseh.
POTATOES:		
1	Phil. May, Belle River, R.R. 1	Tecumseh.
2	L. Lemire, Tecumseh, R.R. 1	Tecumseh.
TOMATOES:		
1	W. Lemire, Tecumseh, R.R. 1	Tecumseh.
2	Paul Gouin, Tecumseh, R.R. 2	Tecumseh.
3	Maurice May, Tecumseh, R.R. 1	Tecumseh.
4	Fred. May, Tecumseh, R.R. 1	Tecumseh.
5	Jos. Mayrand, Tecumseh, R.R. 1	Tecumseh.
6	V. Robinet, Tecumseh	Tecumseh

DISTRICT No. 4.

Prize.	Name and Address.	Branch.
CABBAGE:		
1	A. Guthrie, Sarnia	Blackwell.
2	C. A. Wilson, Sarnia	Sarnia.
MELONS:		
1	W. A. Thrasher, Sarnia	Sarnia.
ONIONS:		
1	Fred. Somes, Sarnia, R.R. 3	Sarnia.
2	J. A. Humphrey, Stratford	Stratford.
POTATOES:		
1	C. A. Wilson, Sarnia, R.R. 1	Sarnia.
2	H. R. Dent, Sarnia, R.R. 3	Sarnia.
3	Fred. Somes, Sarnia, R.R. 3	Sarnia.
4	J. W. Yeates, Sarnia, R.R. 3	Sarnia.
5	Robt. Ridealgh, Sarnia, R.R. 1	Sarnia.
6	W. A. Thrasher, Sarnia	Sarnia.

Prize.	Name and Address.	Branch.
Tomatoes:		
1	A. Guthrie, Sarnia	Blackwell.
2	C. A. Wilson, Sarnia	Sarnia.
3	W. A. Thrasher, Sarnia	Sarnia.
4	C. W. Dempsey, Sarnia	Sarnia.
5	P. S. Robinson, Sarnia	Sarnia.

District No. 5.

Prize.	Name and Address.	Branch.
Cabbage:		
1	F. F. Reeves, Humber Bay	Toronto.
2	Geo. Aymer, Humber Bay	Toronto.
3	Jos. Tiverson, Humber Bay	Toronto.
4	T. K. Aymer, Humber Bay	Toronto.
5	Jas. Dandridge, Humber Bay	Toronto.
6	Art Carlton, Lambton Mills	Toronto.
Celery:		
1	P. A. Bell, Humber Bay	Toronto.
2	J. J. Davis, London, R.R. 7	London.
3	Art Carlton, Lambton Mills	Toronto.
4	G. W. Bycroft, London, R.R. 7	London.
5	N. Sanderson, London, R.R. 7	London.
6	T. McInnes, London	London.
Melons:		
1	F. G. & C. W. Fuller, London, R.R. 4	London.
2	G. W. Bycroft, London, R.R. 7	London.
3	N. Sanderson, London, R.R. 7	London.
4	P. T. Jean, London, R.R. 8	London.
5	T. McInnis, London	London.
6	A. McInnis, London	London.
Onions:		
1	P. T. Jean, London, R.R. 8	London.
2	Geo. Shuret, Brantford	Odd.
3	F. G. & C. W. Fuller, London, R.R. 4	London.
4	Geo. Aymer, Humber Bay	Toronto.
5	T. K. Aymer, Humber Bay	Toronto.
6	W. E. Crandall, Ingersoll	London.
Potatoes:		
1	F. F. Reeves, Humber Bay	Toronto.
2	G. W. Bycroft, London, R.R. 7	London.
3	W. A. Broughton, Whitby	Toronto.
4	Jas. Dandridge, Humber Bay	London.
5	J. J. Davis, London, R.R. 7	Toronto.
6	T. K. Aymer, Humber Bay	Toronto.
Tomatoes:		
1	S. Eaton, Humber Bay	Toronto.
2	Brown Bros., Humber Bay	Toronto.
3	Geo. Aymer, Humber Bay	Toronto.
4	T. K. Aymer, Humber Bay	Toronto.
5	F. F. Reeves, Humber Bay	Toronto.
6	Art Carlton, Lambton Mills	Toronto.

PRIZE WINNERS IN GARDEN COMPETITION, 1919.

District No. 1.

Prize.	Name and Address.	Branch.
1	C. McConnell, Aylmer, Que.	Ottawa.
2	O. Parisien, Cyrville, Ont.	Ottawa.
3	B. Lancaster, Cataraqui	Kingston.
4	Geo. Harris, Belleville	Belleville.
5	Wm. Trick, Ottawa	Ottawa.

District No. 2.

1	Gordon Fry, Vineland Sta.	Clinton and Louth.
2	R. Pierson, St. Catharines	St. Catharines.
3	W. S. Eborall, Beamsville	Clinton and Louth.
4	R. Lister, Beamsville	Clinton and Louth.
5	R. H. Potter, Beamsville	Beamsville.

DISTRICT NO. 3.

1	Geo. Stone, Tecumseh	Tecumseh.
2	Jos. Mayrand, Tecumseh	Tecumseh.
3	V. Robinet, Tecumseh	Tecumseh.

DISTRICT NO. 4.

1	C. A. Wilson, Sarnia	Sarnia.
2	A. Guthrie, Sarnia	Blackwell.
3	W. A. Thrasher, Sarnia	Sarnia.
4	Fred. Somes, Sarnia	Sarnia.
5	P. S. Robinson, Sarnia	Sarnia.

DISTRICT NO. 5.

1	P. T. Jean, London, R.R. 8	London.
2	Jos. Tiverson, Humber Bay	Toronto.
3	G. W. Bycroft, London, R.R. 7	London.
4	Art Carlton, Lambton Mills	Toronto.
5	Jno. Norris, Eagle Place	Odd.

CANADIAN NATIONAL EXHIBITION.

PRIZE WINNERS.

CABBAGE.

Prize.	Name and Address.
1	Jas. Cox, Ottawa, R.R. 1.
2	F. F. Reeves, Humber Bay.
3	Geo. Aymer, Humber Bay.
4	T. K. Aymer, Humber Bay.
5	I. A. Farquharson, Aylmer, Que.
6	C. A. Wilson, Sarnia.
7	Jas. Dandridge, Humber Bay.

CELERY.

Prize.	Name and Address.
1	Art. Carlton, Lambton Mills.
2	G. W. Bycroft, London, R.R. 7.
3	Geo. Harris, Belleville.
4	P. A. Bell, Humber Bay.
5	Jno. Baker, Cataraqui.
6	C. E. Post, Brighton.
7	Cooke Bros., Cataraqui.

MELONS.

Prize.	Name and Address.
1	V. Robinet, Tecumseh.
2	Wm. Trick, Ottawa.
3	Jas. Cox, Ottawa, R.R. 1.
4	F. G. & C. W. Fuller, London, R.R. 7.
5	P. T. Jean, London.
6	Jno. McMullen, Cumming's Bridge.
7	N. Sanderson, London.

ONIONS.

Prize.	Name and Address
1	T. K. Aymer, Humber Bay.
2	Geo. Aymer, Humber Bay.
3	Geo. Stone, Tecumseh.
4	W. E. Crandall, Ingersoll.
5	Wm. Trick, Ottawa.
6	Con. McConnell, Aylmer, Que.
7	Geo. Riley, Aylmer, Que.

POTATOES.

Prize.	Name and Address
1	T. K. Aymer, Humber Bay.
2	F. F. Reeves, Humber Bay.
3	Jas. Dandridge, Humber Bay.
4	Frank Wise, Peterboro.
5	W. S. Eborall, Beamsville.
6	Cooke Bros., Cataraqui.
7	Leo. Martin, Vineland Sta.

TOMATOES.

Prize.	Name and Address
1	S. Eaton, Humber Bay.
2	Geo. Aymer, Humber Bay.
3	T. K. Aymer, Humber Bay.
4	Jno. McMullen, Cumming's Bridge.
5	F. F. Reeves, Humber Bay.
6	Wm. Trick, Ottawa.
7	Art. Carlton, Lambton Mills.

CENTRAL CANADA EXHIBITION, OTTAWA.

CABBAGE.

Prize.	Name and Address.
1	Geo. Aymer, Humber Bay.
2	T. K. Aymer, Humber Bay.
3	Jas. Cox, Ottawa, R.R. 1.
4	C. F. Kitney, Peterboro, R.R. 11.
5	F. F. Reeves, Humber Bay.
6	Jno. Baker, Cataraqui.

CELERY.

Prize.	Name and Address.
1	G. W. Bycroft, London, R.R. 7.
2	Geo. Harris, Belleville.
3	Cooke Bros., Cataraqui.
4	P. A. Bell, Humber Bay.
5	Art Carlton, Lambton Mills.
6	C. E. Post, Brighton.

MELONS.

Prize.	Name and Address.
1	Jas. Cox, Ottawa, R.R. 1.
2	Wm. Trick, Ottawa.
3	P. T. Jean, London, R.R. 8.
4	N. Sanderson, London.
5	F. G. & C. W. Fuller, London.
6	Chas. Hemingway, St. Catharines.

ONIONS.

Prize.	Name and Address.
1	Geo. Aymer, Humber Bay.
2	W. E. Crandall, Ingersoll.
3	Wm. Trick, Ottawa.
4	T. K. Aymer, Humber Bay.
5	C. McConnell, Aylmer, Que.
6	Geo. Riley, Aylmer, Que.

POTATOES.

Prize.	Name and Address.
1	T. K. Aymer, Humber Bay.
2	Cooke Bros., Cataraqui.
3	L. R. Martin, Vineland Sta.
4	Frank Wise, Peterboro.
5	W. A. Broughton, Whitby.
6	F. F. Reeves, Humber Bay.

TOMATOES.

Prize.	Name and Address.
1	S. Eaton, Humber Bay.
2	Geo. Aymer, Humber Bay.
3	T. K. Aymer, Humber Bay.
4	Geo. Harris, Belleville.
5	Wm. Trick, Ottawa.
6	Wm. Dempster, Aylmer, Que.

WESTERN FAIR, LONDON.

CABBAGE.

Prize.	Name and Address.
1	T. K. Aymer, Humber Bay.
2	Jas. Cox, Ottawa.
3	Geo. Aymer, Humber Bay.
4	C. F. Kitney, Peterboro, R.R. 11.
5	F. F. Reeves, Humber Bay.

CELERY.

1	G. W. Bycroft, London, R.R. 7.
2	J. J. Davis, London, R.R. 7.
3	Art. Carlton, Lambton Mills.
4	Geo. Harris, Belleville.
5	C. E. Post, Brighton.

MELONS.

1	G. W. Bycroft, London, R.R. 7.
2	F. G. & C. W. Fuller, London, R.R. 7.
3	N. Sanderson, London.
4	V. Robinet, Tecumseh.
5	P. T. Jean, London.

ONIONS.

Prize.	Name and Address.
1	Geo. Aymer, Humber Bay.
2	T. K. Aymer, Humber Bay.
3	W. E. Crandall, Ingersoll.
4	Wm. Trick, Ottawa.
5	F. G. & C. W. Fuller, London.

POTATOES.

1	T. K. Aymer, Humber Bay.
2	Cooke Bros., Humber Bay.
3	F. F. Reeves, Humber Bay.
4	L. R. Martin, Vineland Sta.
5	Jas. Dandridge, Humber Bay.

TOMATOES.

1	S. Eaton, Humber Bay
2	T. K. Aymer, Humber Bay.
3	Geo. Aymer, Humber Bay.
4	F. F. Reeves, Humber Bay.
5	Geo. Harris, Belleville.

KINGSTON INDUSTRIAL EXHIBITION.

CABBAGE.

Prize.	Name and Address.
1	J. H. Rittenhouse, Vineland Sta.
2	Geo. Riley, Aylmer, Que.
3	T. K. Aymer, Humber Bay.
4	Cooke Bros., Cataraqui.
5	A. Guthrie, Sarnia.

CELERY.

1	Art. Carlton, Lambton Mills.
2	Geo. Harris, Belleville.
3	Cooke Bros., Cataraqui.
4	John Baker, Cataraqui.
5	J. J. Davis, London, R.R. 7.

MELONS.

1	Jas. Cox, Ottawa, R.R. 1.
2	V. Robinet, Tecumseh.
3	Chas. Hemingway, St. Catharines.
4	Cooke Bros., Cataraqui.
5	Thos. Fee, St. Catharines.

ONIONS.

Prize.	Name and Address.
1	Geo. Aymer, Humber Bay.
2	Wm. Trick, Ottawa.
3	P. T. Jean, London.
4	W. E. Crandall, Ingersoll.
5	Cooke Bros., Cataraqui.

POTATOES.

1	John McMullen, Cumming's Bridge.
2	T. K. Aymer, Humber Bay.
3	Cooke Bros., Cataraqui.
4	F. F. Reeves, Humber Bay.
5	W. J. Okes, Peterboro.

TOMATOES.

1	C. W. Dempsey, Stratford.
2	Cooke Bros., Cataraqui.
3	S. Eaton, Humber Bay.
4	T. K. Aymer, Humber Bay.
5	Geo. Harris, Belleville.

Ontario Department of Agriculture

ANNUAL REPORT

OF THE

Corn Growers' Association

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

Printed by
THE RYERSON PRESS.

To His Honour LIONEL H. CLARKE,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the honor to present herewith for your consideration, the Report of the Corn Growers' Association for 1919.

Respectfully submitted,

MANNING W. DOHERTY,

Minister of Agriculture.

TORONTO, 1920.

ONTARIO CORN GROWERS' ASSOCIATION

OFFICERS FOR 1919-1920.

Honorary President	Lester Gregory, R. 1, Chatham.
President	Walter Anderson, Amherstburg.
First Vice-President	Stewart McDonald, Pt. Lambton.
Second Vice-President	Frank Weaver, Turnerville.
Treasurer	J. H. Coatsworth, Kingsville.
Secretary	P. L. Fancher, Chatham.
Superintendent	Fred I. Ure, Maidstone.

Directors.

Norm. Dumouchelle, Windsor, No. 1.
A. Ouellette, Walkerville.
Fred I. Ure, Maidstone.
Hubert Wilson, Maidstone.
B. R. Cohoe, Woodslee.
O. D. Gagnier, Tilbury, No. 4.
F. B. Green, Comber.
Fred Pettypiece, Auld.
A. E. Deneau, N. Malden.
Jno. Gould, Essex.
Jno. Arner, Kingsville.
Ray Jackson, Cottam.
Jno. Pierce, Staples.
Thos. Heatherington, Wheatley.
A. L. Shaw, Tilbury.
J. B. Rhodes, Chatham.
A. R. Everitt, Chatham.
Jas. Brisley, Thamesville, No. 4.
Peter Clark, Highgate.
Earl Montgomery, Dresden.
Frank Weaver, Turnerville.
Harry French, Dresden.
Dan Buchanan, Thamesville.
H. Sheller, Pt. Lambton.
Clement White, Mooretown.
Bert Curry, Florence.
Stewart McDonald, Pt. Lambton.
Wm. McCutcheon, Glencoe.
Stewart L. Pierce, Wallacetown.
Howard Zavitz, Ilderton.
J. A. King, Wardsville.

FINANCIAL STATEMENT TO APRIL 15, 1920.

Receipts.

Balance on hand	$478 03
Legislative grant	500 00
Essex County grant	250 00
Kent County grant	250 00
Municipal grants	460 00
Gate receipts	596 65
Space sold at exhibition	235 00
Advertizing in prize lists	220 00
Dept. of Indian Affairs	20 00
Donations	30 00
Membership	70 00
Building for exhibition, fuel, light, etc., furnished by the City of Chatham, estimated at	150 00
Total	$3,259 68

Expenditures.

Cash paid in prizes	$1,109 25
Judges services and expenses.	128 00
Printing	264 00
Advertising	143 66
Directors' expenses	241 31
Stenographer	144 80
Express	53 86
Cost of central exhibit	55 00
New Trophy, silver cup	85 00
Jeweller account	14 53
Postage	77 27
Chatham Pet Stock Associat'n	50 00
Hall rent	20 00
Janitor	20 00
Treasurer	50 00
Decorating	5 00
Exchange and war tax	13 80
Corn lost at Exhibition	5 00
Auditing	8 00
Lumber	7 28
Cost of soliciting advts. for prize lists	30 00
Sundries	19 39
Building, etc., furnished by City of Chatham	150 00
Balance on hand	564 53
Total	$3,259 68

Ontario Corn Growers' Association

ANNUAL CONVENTION.

The Twelfth Annual Exhibition and Convention of the Ontario Corn Growers' Association was held in the Armouries, Chatham, on January 13-16, 1920.

For the first time the Corn Growers' Association combined with the newly formed Chatham Poultry and Pet Stock Association to hold exhibition of the poultry and pet stock as well as corn and grains. The combined show was a decided success.

Some of the silver trophies competed for at the Corn Show held at Chatham, January 13-16, 1920.

The Armoury was exceptionally well decorated with flags and bunting. In the centre, opposite the entrance was a large and attractive exhibit advertising the products of the farms in Kent County. This exhibit was put on by the Kent Centre Farmers' Club.

On Thursday, January 15, the Duroc Jersey Swine Breeders' Association of Essex County held an assignment sale of pure-bred Duroc hogs. Four head of pure-bred Shorthorn cattle were also sold the same afternoon. The combined interests of corn, grains and the poultry show and a sale of pure-bred live stock brought out large crowds, considering the condition of the roads.

Much money had been added to the prizes offered in many of the classes. All of the Provincial classes of corn were increased and many county classes adjusted in regard to the amount of prizes offered to more nearly represent the amount of the various varieties of corn grown. There were two new classes added this year. One for sheaves of grain and one for Indian native corn. The latter class is for Indians only.

Mayor F. H. Brisco cordially welcomed the Convention and the newly appointed Minister of Agriculture, Hon. Manning W. Doherty. He spoke highly of Kent as a great corn raising and generally good agricultural county.

ADDRESS.

Hon. Manning W. Doherty, Minister of Agriculture for Ontario, Toronto.

It is my first and most pleasant duty to express my appreciation of the kind words of welcome by your Mayor. I can assure you that I appreciated very deeply the welcome that you have extended to me, and the invitation extended to be present at your show. I came here to this Corn Fair for the purpose, in the first place, of seeing for myself this show which has done so much in the years gone by for the seed corn trade in this Province, making it famous throughout the Province and extending its boundaries of usefulness. I may say that I saw a part of your exhibition—your Seed Corn Show—yesterday, and last night at Ottawa and seeing it here to-day in Chatham, ladies and gentlemen, I want to take this very early opportunity of congratulating, in the first place, the officers of the Association for the success which has attended their efforts. And while I want to congratulate the officers of the Association I know from my experience, not in seed corn shows, but other varieties of shows, that the largest and greatest congratulations should go to the exhibitors, for they are the ones who make any show a success. I had an opportunity in the last couple of hours of a hurried trip over your show and I can, without any hesitation at all, congratulate all those exhibitors. Those who were not successful, let us hope, will come back the next year with exhibits that will be capable of winning. I wanted in the second place, to get in touch with the people in this district and learn their problems.

As you are aware, in this peninsula you are blessed with a climate and soil quite unlike any other in the Province, and as a result you have developed along certain special lines of agriculture, and that development has brought with it special problems. You have gone into the growing of sugar beets, seed corn, vegetables, and tobacco. These are branches of agricultural industry which are to a large extent limited to this peninsula which we call the Garden of the Province of Ontario.

I might say that although this is the first time I ever had the pleasure of attending a Corn Show in Chatham I have long been aware of the quality of seed corn produced here. Like all other eastern farmers in the dairy business I have to depend almost entirely upon this section for my ensilage seed. The only time I had a failure on my farm, growing ensilage, was when I was forced through circumstances to accept seed not grown in my own Province; and I think one of the problems that faces the corn growers of this district is the problem of distribution. No doubt there are several, but to my mind one of the greatest problems is the problem of distribution, the problem of getting your seed corn not only before the eyes of all the farmers in the Province needing seed corn, but to get it into their hands. We are frequently besieged with agents selling imported seed. Sometimes it is good, sometimes it is not so good. On occasions when I had to grow my ensilage from southern grown corn I may say my crop that year was a comparative failure.

Now. the production of good seed corn is largely a problem of cultivation, and I am not one of those who feels that it is the duty of the agriculturist to stand up before an audience of farmers and tell them how to grow their crops. I always felt that the farmers pretty well know and are quick to learn how to produce the crops, but that it is the duty of the Government to do for the farmers what the farmers were unable to do for themselves; and in the matter of marketing their crops of seed corn, tobacco, and other products, we feel that is a line of endeavor in which the Government of this Province would be perfectly justified in working. In the matter of finding a market for your seed corn I may say that so long as I am Minister of Agriculture in the Province your marketing problems will have my very serious attention.

In regard to the matter of the Winter Fair in this district, I am one who is no hand at making promises. I would rather build my reputation on accomplishments than promises. Some of you may have heard me speaking at the Winter Fair at Guelph. I stated that the holding of a large national live stock show in one part of the Province would have my support, because I think it would be the means of bringing the best stock we produce in the Dominion before the breeders of the Dominion, and also to the attention of the neighbors to the south of us; but I also warned them that it would be practically impossible to make a success of a national winter fair unless we had shows held at an earlier date at the various points throughout the Province. If they are to have a National Winter Fair at Toronto, a Seed Fair, a Stock Fair, a Poultry Fair, and so on, if they are going to make that a permanent success, it is absolutely necessary that we continue to hold shows at Guelph and Chatham and so on. I shall be very glad to have the Association lay their plans before us and the matter will be very seriously considered and an early decision rendered.

Now, in the matter of seed corn, some may think it is more or less of a local affair that only concerns those of you here in this particular part of the Province of Ontario who are directly and immediately concerned in the production of that seed. If you will allow me to trespass on your time for a few minutes I shall point out the larger aspect of this question. We have just passed through five or six years of stress and strain and these years have produced a great many changes. These changes have shaken the very foundations of our civilization. And all that has caused an unrest that I need not go into. But I want to make this point: as a result of the patriotism of this country, Canada is now face to face with a national debt of $2,000,000,000. I am not one to stand up before a Canadian audience and criticize the expenditures that were made. Some no doubt was wasted, and some wisely expended; but it is not a Canadian's place to stand up and criticize these expenditures. We know that only one great problem confronted the people of this country and that problem was to win the war. And the war was won, and we are now face to face with a national debt of $2,000,000,000. It will require of this country about $400,000,000 a year to meet the interest on our foreign obligations and pay our running expenses. Four hundred million dollars for 8,000,000 people is $50 apiece for every man, woman and child in this whole Dominion. So that brings us to the realization of the great obligation under which this country rests, and the great problems by which she is confronted. And while I do not criticize the expenditure of this money I will say that, face to face as we are with this tremendous problem, the people of Canada will discharge that obligation. (Applause.) Canadian people will never stand for going back upon their debts or the repudiation of the public debt. Our obligations will be met each year and officially discharged. Now, then, that being the case, let us see how best we can discharge these obligations.

It has been said by economists, and I think correctly, that this tremendous national obligation must be discharged almost entirely out of the top six inches of the soil in this country. The only way we can discharge this obligation is by production, consumption and exportation of products. It is possible that a portion can be met by an increased production of the products of manufacture, but in a large measure this obligation must be met by the productions of the soil, because agriculture is in itself the true basic industry of this country. It is basic because of the fact that it is the only industry which of itself is self-sustaining and self-perpetuating. I can understand that agriculture, if it were not supported by the other industries would drag along and would not be flourishing, but I am one of those who believe that in a country such as this we cannot have any permanent policy of prosperity unless that policy has its genesis in agriculture. The agricultural industry is the basic industry because it is the only one which can exist by itself and without which all other industries would pass out of existence.

Now, in this country of ours, agriculture in the year 1917-1918 produced $1,500,000,000 worth of products, 50 per cent. more than all the other industries of the Dominion, and all the products of the forests and mines of the Dominion. There are more men laboring on Canadian farms than are engaged in all the other industries of the Dominion, and when you come to think of this and the thousands and thousands of acres yet in this Dominion untouched and uncultivated, where is the man who has the hardihood to say that after all this Dominion is not wrapped up in agriculture? The industrial development can have no real success, they will have no prosperous development unless we have prosperous agricultural development. We are depending upon agriculture for our revenue to discharge these obligations, so let us see how it can be done.

It is true at this time we produce large quantities of wheat, having for exportation 100,000,000 to 150,000,000 bushels of wheat every year, and it is the history of agricultural development in any country that with the increased price of land and the increased population the tendency to produce grain and grain alone gradually diminishes, and it has been found that the production of grain and grain alone from year to year will sap the fertility of the land and it will be necessary to go to some other crops. While we derive a tremendous revenue from the production of the specialties in this section, we have to depend to a large measure on live stock for our great agricultural development: live stock, dairying, beef and hogs. It is the history of agricultural development of all countries that when the price of land depreciates and the population becomes more dense, that the beef industry has been driven back: and I believe this Province of Ontario will be for generations the breeding ground for all kinds of pure-bred stock for the Dominion of Canada, and I believe that farming very largely drifts into dairying because dairying is a line of live stock which will bring sufficient returns to pay the interest on the land when the land is high priced. The point I am making is this: for the discharge of this national obligation, if it rests on the agriculturists of this Dominion and this Province, and if the basis of agriculture in this Dominion is live stock, I want to go one step further in the argument and show you that it would be almost impossible for us in the Province of Ontario to successfully go into dairying or the production of beef unless we have the silo.

I know when I was a boy, silos were unknown, but very shortly silos came along. If the silos were wiped out and we had no ensilage I hardly know what we would do. Therefore, I say in this Province of Ontario we are very largely dependent on ensilage for the maintenance of our live stock industry. There was, last year, over 400,000 acres of ensilage corn grown in the Province of Ontario. You can easily figure up from that the amount of seed corn that was necessary for the production of that ensilage. There is no food of the same value and succulency that I know of that will replace ensilage for dairying purposes and for the production of beef. Now then, we are limited in our supply of seed corn for the growing of this 400,000 acres of ensilage to practically this portion of the Province of Ontario. At least I do hope that the day is near at hand when you, in this section will supply all of the seed corn required in this Province of Ontario, because any man who has been growing ensilage for years will realize that there is no seed so reliable for that purpose as the home-grown seed. Therefore, I think I can safely say that I have brought the argument down to the point of showing you that in this section of the Province of Ontario, where you produce seed corn which produces the ensilage which produces the live stock which produces the greatest portion of our agricultural industry, you should see the great national importance of this seed corn which you grow in this portion of Ontario.

Those of you who are concerned in the growing of tobacco will be interested in the marketing of the tobacco, those who grow vegetables in the marketing of their vegetables. I can appreciate the far-reaching elements of that problem. I do not know that it is a Provincial matter, but I do know that our Department will be prepared to assist in placing the growers in touch with those in Europe who are in the market or who will, in turn, be able to show them where the market is, either for their tobacco or their other products. And I can assure you in closing, that these problems, so long as I remain Minister of Agriculture, will receive my very serious attention, because I may tell you that I am not in public life to-day by any desire of my own. I never had any ambition of my own for public life. I am one of those who believe that the greatest honor that can come to any individual is the honor paid by those who know him best, and I would rather receive a very slight honor from those I have known from my boyhood than to be made Governor-General by means of political pull. And when I was asked to accept the portfolio of Minister of Agriculture by Mr. Drury, I did so because I had gone through the College at Guelph, and am heartily interested in agricultural problems, and I took up the portfolio because I had hoped that my experience might prove of value to the agriculturists of Ontario. I felt that we were going at the solution of agricultural problems in the wrong way. I said to the President of the College at Guelph twenty-five years ago, "If you will leave the farmers alone to a large extent in the matter of the management of their own farms, but show them how to make money or solve the problem for them of getting out of their produce all there is in it, the farmers will very largely solve the production problems for themselves." (Applause.)

I desire to take up, for a moment, a problem which perhaps does not concern you to-day, the matter of dairying—the condition of the butter in this Province. I claim that it is little less than a disgrace. I don't know upon whose shoulders it rests, but I do know that for twenty-five years or more, we in this Province.

have been spending considerable money in the development of the dairy industry and in the production of good butter, and to think that at this date, 1920, of all the Provinces of the Dominion of Canada, I am informed by credible experts that as a Province our butter stands lowest of all. Now, there is very grave cause if that be the case. I have been in every Province in this Dominion, and I am in the dairy industry myself, and I know there is no Province in the Dominion of Canada which can produce dairy products as cheaply and of as good quality as can the Province of Ontario, therefore, we must look for some other reason. We have been attempting to solve the problem of grading butter, having an inspector grade the dairy butter—and a man's butter was marked Special No. 1, No. 2, No. 3 and that was all. There was no inducement for a man to produce better butter if nothing came of the grading. He could go on for fifty years and nothing happen. There is only one way to my mind to get over that difficulty and that is to make a standard price for butter and pay two or three cents a pound extra for Government graded and inspected butter. In two or three years you would have solved the problem. And that is the way we intend to go after these problems. Make it worth the man's while, make it worth more money and he will produce a better product.

THE PRESIDENT: There is just one little matter that I would like to take the opportunity of either suggesting or impressing on the Minister of Agriculture this afternoon. As you know, I have been connected with the Corn Growers' Association for a number of years; I have had the privilege of being a director for some years, and came up gradually through the different vice-presidencies until I had the honor of being President this year, so I probably know a little of the difficulties attached to the Association.

We have found that we needed a permanent secretary a number of years ago. Arrangements were made and we had the difficulty eliminated, and we have occupying that position to-day one of the best men, I believe, that it was possible to get in the Province of Ontario. I refer to Mr. Fancher. I have worked with him a number of years, and when I say he is an ideal man for the position, I mean it. You all know of the high prices and high wages on the farm. You will pardon a simile. You wouldn't send a good man out with a skinny, ill-fed horse and a rusty plow and expect him to do a good day's work. Our secretary is trying to do such work here. A man cannot grow ten bushels of corn for seed and feed without first having the price of the seed corn. Mr. Doherty will agree, I know, that no man can properly assist or execute a job with insufficient or poor tools; and what has been accomplished has been done through the co-operation of members of the Association. I want to impress upon the honorable gentleman the importance to the work and the wonderful help it would be to the Corn Specialist if he had a few acres of land to work on.

HON. MR. DOHERTY: That did not occur to me when I was speaking, but it occurred to me a few weeks ago. I took it up with the Department of Agriculture at Ottawa, and we were discussing whether in the interests of the section there should be a Provincial or a Dominion breeding station here, to breed corn, tobacco and vegetables. That is a matter we have under discussion, and I would be pleased to be advised by the men of the section as to what they desire.

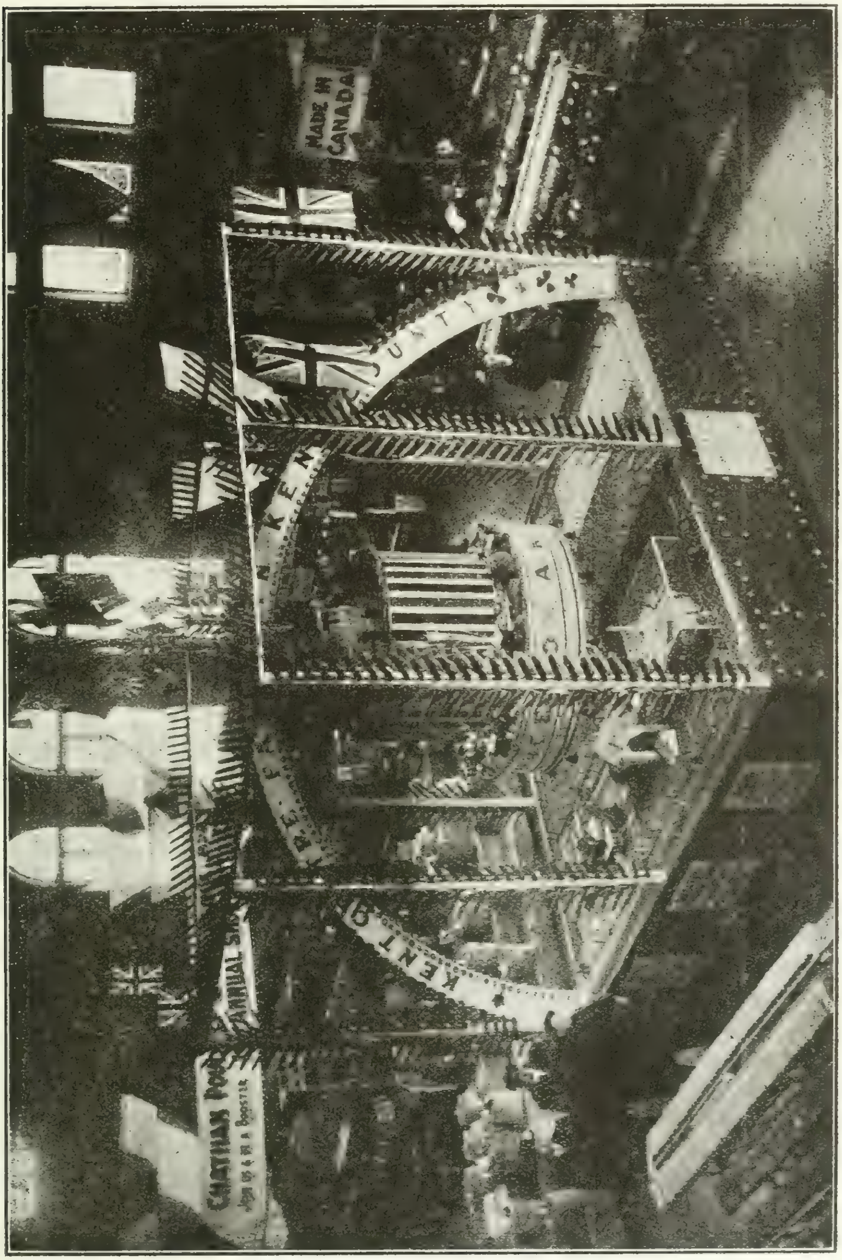


Exhibit of Kent Centre Farmers' Club, advertising Kent County products.

CORN BREEDING.

PROF. R. A. MOORE, MADISON, WIS.

I would be stating it mildly to say I am pleased to be with the good people of Ontario again. I have in the past years enjoyed my coming to Ontario very much, and especially this year I have had an opportunity of going over your show in a more careful way than ever before and saw the great strides you have made in the way of corn production. It makes me feel grateful to the farmers who have taken hold of this great problem in such a wonderful way. I am pleased to come and aid to my utmost ability, because I believe we owe a debt of gratitude to the Province of Ontario especially, and the whole of Canada, for the many good things they have done for their neighbor state, Wisconsin.

We owe to the Agricultural College at Guelph a debt of gratitude for the many things they have helped us with. We grow one-eighth of the barley grown in all the United States right in Wisconsin, and I wish to state that practically 98 per cent. of all the barley grown was produced from seed primarily received from Canada. (Applause.) That proved better than our own, or any that we had used, so we adopted it, and it has now become known as the Wisconsin Pedigree Barley, and from that we now grow one-eighth of the barley crop of the United States.

I want also to mention another thing that shows what a deep debt of gratitude we owe the people of Ontario, and that is the fact that we have been breeding and working on wheat for from fifteen to eighteen years that we originally received from the Station at Ottawa. The Marquis wheat outshone anything we had ever grown before. We immediately adopted it and began breeding and working with it, and to-day it is the Marquis wheat which is our standard and our special pride.

And so today it is a great pleasure for me to see here the corn, which Wisconsin was instrumental in breeding, experimentally, and to see what the people of Canada have done with it. Over in that great Armouries you will see Golden Glow corn and Wisconsin No. 7, which made our State famous as a corn growing State, and I feel that you are going to succeed with this grade of corn as we have done with your barley and wheat, because this corn was bred to win the race. You have beautiful varieties of corn here, one beautiful Bailey, and a fine Essex corn, an exceedingly fine breed of corn, and I believe that by throwing your force on to these varieties of corn instead of splitting up and getting too many varieties you will go ahead and do well.

Your men know what can be accomplished—men like Prof. Saunders and Prof. Zavitz but I know that a few words will help everyone to understand the underlying principles of breeding at least. It seems strange to me when we look around to see the great work that has been accomplished in live stock breeding. Energetic people have been practising this work for a long time, and when we have a great evidence of what breeding will do, as in the Guernsey and Holstein cows which have over one thousand years of patient breeding, and we consider the possibilities of plant breeding—for the plant breeder has an opportunity of making rapid strides over what the animal breeder has because it is largely a matter of individuals, and the animal breeder of necessity has to confine his attention to twenty or thirty individuals while the plant breeder can go out on a field of grain and deal with a hundred million individuals—we can scarcely see why the plant breeders have been so negligent. Over 100 years ago we had an example of what breeding would accomplish when Villeneuve, of France, gave us an idea. He took the insignificant beet, when the country was at war and needed sugar the same as our country needed it during the past war, and he claimed that he could breed the sugar content into the beet. People thought he was crazy, but he went ahead and the insignificant beet that had 2½ per cent. of sugar produced one that contained 22 per cent. of sugar. His work alone was instrumental in establishing hundreds of sugar factories in Europe. These factories have brought into prominence the sugar industry, which has been carried to this country, and you feel the importance of that industry in your section here as a result. But even with all this, the plant breeder's work lay dormant for nearly a century, and it is only twenty-five or thirty years since we awakened to the fact that after all the farm crop is the foundation rock upon which everything else rests. It is the foundation rock upon which the farm rests. It is the farm crop upon which every state or country rests. We point to the great dairy industry of the State of Wisconsin, and say it produces two million dollars every year and we turn to the farm crops and find they bring in ten million dollars every year for the State of Wisconsin alone.

I hope that the farmers of Ontario after hearing the forceful speech of your Minister of Agriculture will heed his advice and thus market your farm crops largely through your farm animals.

Through a large number of years we grew wheat alone until we had a first class wheat market on every farm in the State, and it was largely through Prof. Henry, President of our College, and the Chinch-bug, that we got rid of that fault. Which should have the greater credit is still a question, but to-day we are developing a varied production. Sooner or later a farm will drift backward if a systematic policy is not followed, and I wish to thank your Minister of Agriculture for sounding that note of warning, because we have gone through that particular thing and I know what he has told you is true.

Now, in regard to corn breeding: the success of corn breeding is due, in the first place, largely to individual selection. Corn is one of the most beautiful plants to deal with. A corn breeder has an invaluable office to perform. He is dealing with million dollar problems, and whatever he touches in the matter of farm crop, if he is able to make that crop produce five or ten bushels more per acre, it jumps immediately into big figures.

In Wisconsin, when we made the discovery which prevented us from continuing to grow so many different varieties of corn we found that we could, by using pure-bred corn of a limited number of varieties, add twenty-five million dollars to the assets of the growers of the State.

Twenty years ago when we began to realize that the corn industry should become a great industry in our State if we were going into the live stock business, we were growing a conglomeration of 200 varieties of corn. Nobody knew their names. We had some from Indiana, Nebraska, Iowa, Maryland, and a half dozen other places. We had no standard, nothing that was known as a Wisconsin variety twenty years ago, and when we realized that fact we immediately started to remedy it. We felt that if we were going to succeed in the corn work we had to have a few established varieties, so consequently we got busy in picking out the scrub strains. Our farmers had been forced to purchase corn on the scoop shovel method. We sent our money to a seedsman, and he went to a bin where he had corn from six or seven different States, and he took a scoop-shovel and took out a measure full and sent it to us and we grew little corn and big corn and short corn and tall corn, and some that didn't have any corn on at all. Consequently our sister States laughed at us and they didn't know that we were going to be one of the foremost corn States in the Union. The best we could do was to grow some of the smaller varieties of field corn, so they thought, and advised that we should not waste the public money by trying to grow Dent corn. But we knew that we could grow corn that would compete with every other part of the world if we bred it properly, so we bred these varieties mentioned here. That is the only way; get back to the individual. It is only a question of getting back to the same principles as we use in the breeding of live stock and applying them to the breeding of the plant. For instance, the grain breeder has in the plant a very easy organism to deal with; corn is perhaps the easiest plant there is to work with. We can make it develop a plant with four leaves to the stalk, or eight or twenty-four or thirty, with one ear, two, three or four ears. We can make the plant put out its leaves regularly, within a foot of the ground or irregularly, and so far from the ground that you need a stepladder to reach it. If we observe these characteristics, and follow out those we desire the plant to have, the plant will go on and hold these characteristics, and that is the way we are able to breed the great yielding quality into corn, and consequently, when we put these new varieties of high-bred, well-bred corn into the hands of our people, and they began to use them extensively it made a perceptible advance in the yield of the corn crop. For instance, we might compare the breeding of corn to that of swift horses. If we were to look back into the pedigrees of these horses we would come to the name "Messenger," and why? Simply because Messenger was one of those great sires of tens of thousands of sires who had the ability of giving to his offspring the great development of bone and strength and the muscle that would give them the power to win the race. And I wish to say to the young men here, when you get out into the world the measure of your success will not be the stock you came from, and whether your ancestors had blue blood, or whether your diploma had blue ribbon or red ribbon on, but if you are given the opportunity, can you accomplish the job? If an obstacle confronts you, put your feet fair and square upon it or go around it, but put yourself on the other side of the obstacle. If you can do that the world wants you. On every hand the world calls for the man who has the power to win the race.

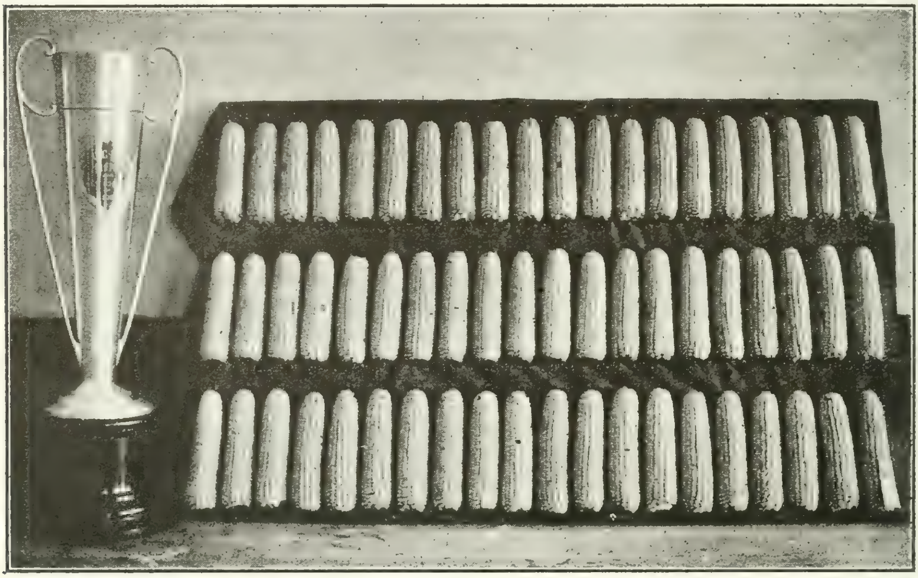
After all our breeding work, and in all our work, in fact, we have placed the thing fairly and squarely before the eyes of our people and asked them to give the high-bred seed a trial. And the farmer who was prejudiced, who had been using corn handed down from his grandfather wouldn't change. Now, we wanted to breed a corn that was pure, and we wanted to show him we could supply corn that would yield three or four times what his nondescript stock would produce. This has worked out automatically in our State. We do not think it is necessary to go around and convert the farmers through talk. We want the corn itself to tell the story.

If I am going to be of any help to the people of Ontario, I can only be of help by telling you what we have accomplished in Wisconsin and how we did it. I believe one of the reasons you are using Wisconsin corn is perhaps because you are in the same latitude as we are—in around the 42nd to 47th degree, that's what the Province of Ontario is in—and there's no reason why the things that are good for us in Wisconsin should not be good for you here in Ontario, even as the things that are good for you here in Ontario have proven good for us in Wisconsin. And the pure-bred corn that has done so well here and the pure-bred wheat and barley that have done so well there, owe their success in the different locations largely to the fact that our conditions are so very similar. One thing I intended to mention, and your Minister of Agriculture mentioned first, is dissemination. We could go on and breed and breed, but if we depended upon what we grew on our College farm and the dissemination among our standards it would not have the effect of a drop of water in a hogshead, and that is what we need to have organization for.

You have organizations the same as we have, and the experimental farm of Wisconsin was patterned after your Canadian Association. And that's another thing I am thankful to Canada for, and another reason why I was glad to be able to go up before the Legislature of our State and say, " Here's what Canada does to help the farmers, it makes an appropriation of so much, and why can't we in Wisconsin do the same?" And they gave us the appropriation. And we have a dissemination association, which has at least three factors. There is first the breeder. This work has got to be done by college men because it is careful work, dissemination; if you are going to make it pay you, you have to grow this corn in thousands and hundreds of thousands of bushels. We found we were handicapped on our experimental plots. We aim now to grow all pedigree corn in million bushel lots and all the farmers of the State can get their supply because there is an abundant supply and our Association governs the sale of the seed, and while we do not want any individual to take advantage of the farmer, we want the members of the Association to get a good fair price and a little margin over what we can regard as the market price, and that's what we have our work based upon. So we have begun work in Wisconsin and established what we call our corn zones. We run clear up to the 47th degree of latitude from the 42nd (42.36) the upper part being of such different temperature that we have had to use different breeds. All told, we have now only about six or seven varieties. We did have about 200. We kicked out about 193 and we are using the six or seven. You will see if you use these varieties you have now and not develop so many varieties, and devote as much energy on the few accepted varieties, you will notice an increased success. You should have a good central breeding station, because in that way you keep the type of the corn and you can run it up to branch stations and it keeps the same idea that this corn has at the central station, becoming acclimatized to the various different latitudes. You will have the same type as you go north as you have in the south. There will be a difference in the growth of the corn, the size and the formation, but at the same time it is the same corn.

We have started out with the idea first of putting in what is known as corn centres throughout our State. In these corn centres we have a number of Wisconsin Corn Associations. The farmers whose farms are the corn centres are members of the Wisconsin Corn Association. They put in two or theree acres each year, of just our Golden Glow, Silver King, No. 7, and so on, of corn that we supplied, and they begin the next year and put in thirty to forty acres. These men make a business of growing seed and growing it in large quantities, so that parties coming in for seed corn from the different counties of our State can be referred to the centres in their own county. We only grow a few hundred bushels at our experimental station to send out to the members of the Association. When a member starts growing his seed and the neighbors around him see his success they will copy him and adopt his varieties. But sometimes a man will grow good seed and his neighbors will be growing different kinds, and his corn is liable to be crossed, so to limit that, every third year, we renew the variety from the central station because the pollen goes quite a long way and the corn becomes crossed, which is undesirable. If we did not renew the crop every three years or so, it would deteriorate, so we go and put in a fresh crop every three years to prevent that. So this fellow will start straight over again with corn that has good breeding work on it, and it is given to him as perfect as we can make it, and we have a great many workers who are putting lots of stress on the growth of good seed corn, and in a short time they are getting centres built up where people are growing the same kind of seed for miles and miles, 20 or 30 miles at a stretch where you will see only one breed of corn, as you drive through the country.

We feel that by this work of dissemination we have put this good corn within reach of all the farmers.



60 ears, Champion Dent Corn, Wisconsin No. 7 and O.C.G.A. trophy at Chatham, January 13-16, 1920.

Another method we have chosen as a factor is the young people. For a great many years we have worked with the Experimental Association, young men of eighteen to twenty years of age, and we did feel that the young men on the farm should be taught something of farming before they got educated and away from the farms to the High Schools of the State. So we got busy and said we would use the boys in this great dissemination work. We first got the County Fairs interested in the proposition, and they put the money up to encourage this work, while we provided the seed. We started with Richmond County some twenty years ago. We had 900 boys. They came together one day to get the seed corn supply and enter into this contest. These boys entered the contest to work and that experimental work was instrumental in spreading No. 7 corn all over that county. The next year we had about six counties and the fifth year we had fifty contests carried out in fifty counties, and we had 28,700 boys in the contest work. The boys, although they are young, can accomplish a great work in putting a better bred, pure-bred corn on practically every farm in the State. This year we had 37,000 boys in the contest work. You see in that way how readily and rapidly we can spread this pure-bred corn throughout the State. A great many fathers would not listen for a moment to changing their corn. They would say that the college-bred corn did not amount to anything; but the boy had to take that corn or stay out of the contest. And of course he took it, and the father wanted to please him although he did not have any faith in that corn. He gave him a little plot to grow it on, and when it began to throw out those perfect ears, the same distance from the ground and at the same angle, the father thought that was pretty good corn, and when he saw the fine arrangement of the rows and the healthy plants, he just naturally changed his way of thinking. I believe there is work that the young people can do, and a work that we can do with the young people. We have never been guilty of putting into the hands of the boys and girls anything but pure-bred seed corn. Corn is a beautiful plant, and I think it means a great deal to put a beautiful thing before the boys and girls. I tell you, it goes a long way in making a pure-bred boy and girl.

The members of the Wisconsin Experimental Association are young men who have had the opportunity of taking the work in our College. That is one of the requirements in our constitution. But we have another class of members who do not belong to the State Association but belong to our County Orders. Our State is marked out into County Orders. We have about fifty-eight counties out of the seventy-one counties in Wisconsin now under County Orders. A great many belong to the State Association and also these County Associations, and these men help those who have had no opportunity to attend the College; and one of the reasons that we attribute our success to is the fact that after we have put several years' work on these grains and give them out to the men we want progressive young men who have had college training and who would take up the work and give it the attention necessary; and that is one of the reasons why we have succeeded as well as we have.

We have mentioned two factors; one is the corn breeder and another is the corn growers. When the frost spread through Wisconsin two years ago, in 1917, everybody thought that all the pure-bred corn was swept out into oblivion; but when it came to listing up our people in that year they listed 225,000 bushels of seed corn even in that off-year. That means in the regular year we put up four or five times that much. We had nearly enough pure seed to plant our entire State in that bad year. And our corn centres established throughout the State were responsible for that foresight. We found that the greatest thing that has been accomplished in our State has been getting people interested, especially in the growing of corn. Before all others, our breeders put by three to five or eight thousand bushels of seed at the Seed Centre that the farmers can come to. You can see that the fellow who is growing several thousand bushels of corn will attend to it more thoroughly than one who grows a few acres in the hit or miss style.

The speaker then told the experience of one young man who started some eighteen years ago, using pure seed, and who cleared $200 from his crop the first year. This he put into the erection of a good barn and drier. Last year he cleared $12,000 cash. Although they had cattle on this farm and carried on some dairying he catered to the seed corn business. And this last year he sold over $75,000 worth of seed. He named his farm "Golden Glow" farm, having bought out his father, and later acquired several adjoining farms. He has made a success of his labors There was the demand, and he specialized to meet the demand. This young man told me recently that he shipped seed to South Africa, and Europe. We are shipping

Wisconsin corn to all parts of the world. I have $2,000 drafts from Odessa, Russia, and we ship to Australia, not to mention shipping to thirty-six States of America, four Provinces of Canada, England, Austria, Japan. Our sale of seeds exceeds $30,000.000 to $35,000,000 a year. That young man wouldn't take a street car conductor's job in Milwaukee! He wouldn't even take a policemanship!

We are always saying to our boys in college: "We want you to unite with these associations, and I'll tell you one thing, we don't want you to hoard up too much money. We want you to use that money to beautify the good old farm home so that the place will be one of the most beautiful places to live in." And the boys have done it. The farm homes to-day are some of the finest in the land, and it is because the boys have been prosperous on the farm. We are not in the agricultural business for the sake of our health. While I do not want to bolster up the almighty dollar, if we are going to give the boys on the farm the opportunity to make the old farm a beauty spot we have got to give them the opportunity to make money or they will leave the farm, just as sure as you are here.

We know that if the seed turned out as we thought it would, it would mean millions of dollars on the farms. That did not mean so much to us as the giving of the farm boy a chance to see what could be accomplished on the farm and the beauties there. If we could put him in a position so that he would be interested in the farm work he would be willing to stay on the farm. We have thousands in Wisconsin who are happy on the farm. And I want to tell you people here, if there is any person on the face of the earth entitled to some of the good things in life it is the farm boy, and he has not had it in the past.

This is the fourth time I have had the honor of coming to meet the people of Ontario; three times to Chatham, and once to Windsor. I wish to state that this time I have been so pleased to see the rapid and great advancement you have made in the corn line because I know what it means to this Province. I know that if Wisconsin, in six years' time could raise the standard of her corn and put out 25,000,000 bushels more than she did before, you can do the same and go us one better. There is no reason why you cannot be producing corn for other countries, for our United States. I know in the past year I have referred hundreds of people to Canada. I said, "There's no use of your paying freight from Wisconsin. Go to Ontario." Prof. Barron, of New York, says: "A great many of my people are buying their seed corn from Ontario. It is good seed and we like it."

Do you know what the Wisconsin Association is selling outside? One year I kept track of the sales outside of the State. There is two or three times as much sold inside of the State, but the supplementary sales totalled $15,000,000 outside the State. The beauty of that is that that money came rolling in to Wisconsin, not to make one or two seedsmen wealthy, but was divided between four or five thousand farm boys. We are not going to settle the question of keeping the boys on the farm by telling them what a beautiful place the farm is, but by giving them the opportunity of having as good a home as they can get elsewhere, and there is nothing as pleasant and beautiful as having pure-bred live stock around and pure-bred seed in the fields, and if the boy can see he has an interest in these beauties he will keep interested, if he is a pure-bred boy.

FLINT CORN.

W. J. LENNOX, SEED SPECIALIST, OTTAWA.

I assure you it is a pleasure for me to visit this section once more. Perhaps some of you do not know me very well, but with a great many of the corn growers I am well acquainted. I think it is over seven years since I first came into this district in the interests of the corn growers. At that time I was sent here as representative of the Seed Growers' Association to visit the seed belts, then under the supervision of the Secretary, Mr. Newman, and I was delighted with every section of it then. And I am sure every visit since has been even more pleasant than the previous ones. This visit to the present show has been one of the most pleasant of a number of experiences. I've noticed the development, in the rapid strides taken in the improvement of the corn, which is a matter of pride, or should be, to the members of the Association.

Before making any reference to varieties, I would like to refer briefly to corn in general. This portion of the Province is particularly suited to the growing of corn for husking purposes. The eastern and northern portions are more adapted for the growing of silage corn. The eastern and northern sections have paid little or no attention to corn for husking purposes, consequently they are required to secure their seed from outside sources, what they require for planting. It is true that a large percentage of this corn has been coming over here from the United States, but I am confident that in a good corn year there would be an ample local supply of seed to fill the needs of the whole of Canada.

In 1918 there were grown 14,568,000 bushels from 250,000 acres for husking purposes. Of that amount, Essex, Kent, Lambton and Elgin produced 9,334,700 bushels. There is a good quantity of corn produced outside of the counties mentioned, but it is safe, I believe, to estimate that in Elgin, Lambton and other counties in Ontario, outside of Essex and Kent, there is a sufficient amount of good corn produced to equal the amount of poor corn produced in Essex and Kent Counties. In other words there are 7,400,588 bushels grown in Essex and Kent of high class seed corn. I think it is a safe estimate that Elgin, Lambton and other points outside of this district will produce enough good corn to make up for the poor material that may be added in this estimate.

In 1918 Canadians planted 752,069 acres for fodder for husking purposes in the whole of Canada. One-third of a bushel is considered sufficient corn to plant an acre. At that rate of seeding Canada in 1918 required 250,689 bushels of corn for seeding purposes. It would take 250,689 bushels to supply the needs of Canada if we allow one-third bushel to the acre. That requirement is very little more than three per cent. of the total crop of husking corn produced in Essex and Kent. I consider from these figures that there is in an average year abundance of seed corn to supply the whole of Canada. If these figures can be depended upon there is a wonderful opportunity for the corn growers to supply a sufficient quantity of choice seed. The corn growers consequently should realize that while the required amount in bushels seems large there is not an unlimited market for seed. Ensilage seed purchasers are not apt to buy anything but good, high-grade seed, and sellers of seed should see that they give good seed that when properly handled will give good results.

It has been my privilege to visit parts of the Eastern Provinces of Ontario and note that the buyers of Eastern Ontario have bought seed corn for which they have paid a fair price and the quality of the material didn't warrant the price, and I believe that seed corn growers in this district should be very careful when they ship corn east that it be high grade that will please the purchaser and bring a number of orders to the corn-growing section.

If each grower of corn in this section were to endeavor to purchase high-grade seed and produce seed corn only for export, I consider that especially in good corn years there would be an over-supply. Apparently the corn plant is especially adapted for the raising of live stock. In normal times, or when the market is steady, hog raising is very good business and corn is a wonderful feed. Much of the corn crop must be fed in this way, and with profitable results. Many visitors to this district have remarked regarding the small number of silos. Why is it? There are no better counties for the production of silage for the feeding of live stock, and it is my opinion it is advisable that in this district more silos should be built, and also that each farmer maintain a greater number of live stock. Live stock raising, to my mind is a profitable business, and when it is carried on and much of the crop fed, there is much fertilizer provided to be applied to the land. This fertilizer is very essential to the production of the crop.

The Ontario Corn Growers' Association was formed, I understand, for creating greater interest in corn growing. It was expected that each member would each year have a stronger desire to produce more and better corn for any purpose that it might be required. Members of the Corn Growers' Association, through their influence and example would encourage the farmers of the district in the same manner until each and every man in the corn country would be desirous of gaining information to enable him to grow larger and better crops. The Association has accomplished much, and I can see in the short space of time I have been visiting this district, they are making improvements in corn growing.

Now, with regard to seed corn, many growers are paying particular attention to seed corn production, and more will. It is fortunate for this district, and for those making a specialty of seed corn, that so many are willing to practise the details which are necessary for the maintaining of the varieties and the improving of the yielding qualities of the different strains. In order that the varieties may be preserved pure and the type maintained and, if possible, the yielding powers increased, it is necessary that careful growers be interested in special seed corn production. When visiting growers who are practising the ear to row method it is interesting to note the performance of the different ears. I can well remember visiting growers near Chatham and one in Essex, who were practising this ear to row method, and in walking down through the section where the plot was stationed you could see the outstanding characteristics of the different rows produced from the different ears of corn. If we were carrying on this method year after year, and selecting those ears which made the best performance, I can say that there would be from these ears a great increase in their yielding power.

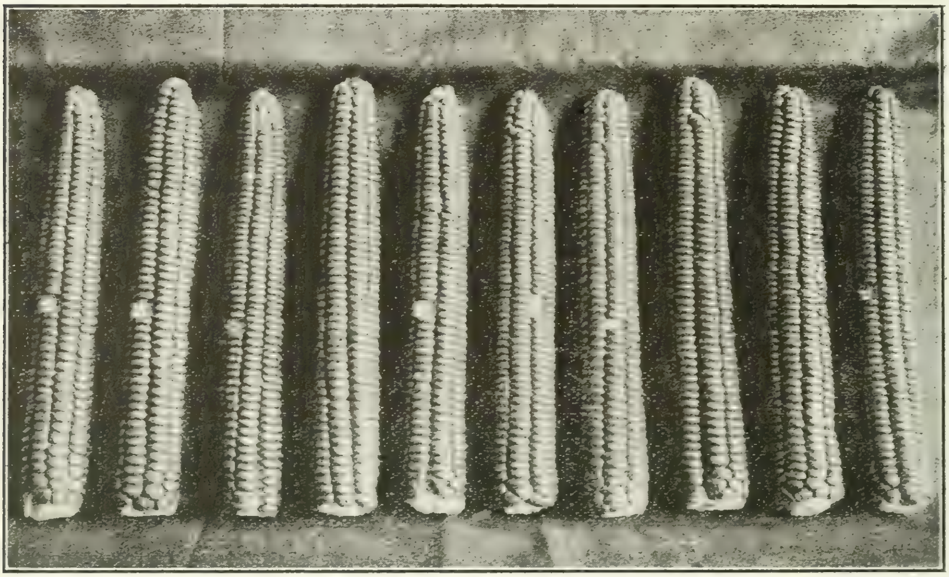
Now, if the grower for husking purposes is willing to give a little time to the matter of his breeding and will go back every three years to pure seed from the men who are specializing in pure seed, and practising these methods of selection for the purposes for which they are intended, a maximum production of corn of the quality for any purpose for which it may be used should be obtained. This should be the aim of all corn growers. To secure this it is necessary to have the properly drained lands, well fertilized and in a good state of cultivation and thoroughly prepared, and the seed bed ready, good seed of pure varieties suitable to the conditions of the soil and climate. The growing crop should be kept free from weeds, well and properly cultivated and the crop well and carefully harvested and stored. Then put some by, as a provision for a bad year. Raise more live stock, especially cattle and hogs in order that more of the product may be consumed on the farm, that more products may be marketed in the form of beef, pork, milk, and butter, with more manure returned to the land, so that the seed growers may get the best possible seed, and to all these add one thing more, to prevent a condition such as occurred two years ago: corn growers in an especially good corn year should save a sufficient amount of seed to cover at least two years.

I had the privilege of passing the orders, or re-writing the orders to the United States in the year that our corn crop was so deficient and we brought in in that year somewhat over 300,000 bushels of corn, most of it southern varieties, and the loss, to my mind, to this country in that year was considerable. The majority of the corn which came in to us was of a type that would not mature sufficiently to make good silage, and our eastern men surely must have had a poor quality of silage that year from what they had when they were getting their corn from this corn district.

I am deeply interested in the flint varieties. The growers of this kind of corn have materially increased the value of the different varieties. At this exhibition I am satisfied that each champion exhibit of flint corn is equally as good in the flint class as is each champion exhibit of dent corn in the dent class, and that the flint corn growers have made just as rapid strides in the improvement of the flint corn as the dent corn growers have made in the varieties of the dent corn. No doubt you have seen the champion samples of Longfellow. It is a wonderful example and a positive proof of what can be done by a flint corn grower. And have you examined the examples of Salzers' North Dakota and Gold Nugget? You will certainly admire each. About that Gold Nugget, not as a variety, but as an example to show what can be done: it is just six, or possibly seven years ago, since the grower of that corn in Elgin County received from Guelph a sample of Gold Nugget corn which was inferior as a sample, and which had a decidedly different type to what it has to-day. In some cases you could lay a small pencil in between some of the rows on the butt and the kernels in some instances were almost white and the kernels had quite a dent, but by selection for six years this man has a corn which is coming right down to a beautiful flint, and if it is kept for a few years more it will show the same quality as the Salzers' North Dakota and Longfellow. I've seen Salzer's North Dakota, Longfellow, Johnston's Yellow Flint corn, in every district where flint corn is grown, as far north as Gravenhurst and as far east as Quebec City.

Mank of our northern growers have had excellent success with flint who could not succeed in the matter of maturity with the dents. Many of our growers spoke of the maturity of flints as compared with dents. It is the man in the north and east, in sections where the season is late and which require a very early maturing corn, that can readily recognize the difference in the maturity of the different varieties of the different classes and different strains. When you go to sections where it is very late, where it takes every week, every day, every hour to bring that corn to maturity suitable for the silo, it is there that you can fully appreciate the difference in the days of maturity. Silage growers, a few years ago aimed to produce a large quantity of silage, irrespective of quality. But growers are beginning to realize that a sweeter silage is produced when the kernels have hardened before the corn is cut for the silo. Rapid storage of high quality nutrients takes place in the latter stages of the development of corn. Some growers who require a large tonnage still hold to the belief that they will sacrifice maturity and quality in order to get tonnage, but a great many of the silage growers in the east have a considerable quantity of hay and straw, and rough feed, and what they really require is a silage of a lot better quality than late maturing varieties will give in that district. This, in my mind, is why our flint varieties are superior to many of the dents.

Now, many growers claim that you can breed and grow a dent which will be superior in all respects for silage to the flint corn. I am not prepared to dispute that fact but I am prepared to state that so far as the types are concerned at the present time the flints in districts outside of the real corn districts produce equal tonnage and sometimes more, than the dent corns, and with better maturity.



Longfellow, champion 10 ears of Flint in Kent, exhibited by R. J. Johnston, Chatham, at Corn Show at Chatham, January 13-16, 1920.

I have no figures, facts or experiments to back me up, but that is information based on the inspections we have made of the crops. I think, perhaps, it would be safe to go further and say that there are men in the east and north who are growing dent corns, especially the later maturing ones, who would be well advised to pay a little more attention to the flint varieties. Now, this is true in my home district. Naturally from my visits to this county I was particularly interested in the silage crops at home. In 1915 I had shipped to the home district six varieties of corn, in total sufficient to plant five acres. The varieties in that case were Longfellow, Golden Glow, Wisconsin No. 7, Bailey, White Cap Yellow Dent and Leaming. The soil was clay loam, perhaps approaching clay, in a good state of cultivation, well supplied with farmyard manure and the ground was left several months in the spring to allow it to be thoroughly prepared and ready for the seed bed.

This corn was planted side by side in rows from one end of the field to the other, where the soil conditions were as near alike as we could possibly procure, from our observation of the previous performance of the field. Now, in maturity, the flint variety was much superior to the dents and had in this respect considerable advantage over its nearest rival, the Golden Glow. As near as could be determined by our crude methods of determining the weights, there was very little difference in the total weights of the product and, as near as could be determined in this instance, we had a more valuable return in silage from the flints than from any of the dent varieties.

I remember that in this experiment the flint was particularly strong in leaf and stalk, and when we took our weights we were surprised to find that there was so little difference in the quantity produced by the flints when compared with the dents, and we were satisfied from an examination of the maturity of the ears that the Longfellow, what was the flint used that year, was far superior to the dents. The following year the flints did better than the dents again, and the nearest dent rival was Golden Glow. Last year, 1919, the only varieties used were Salzer's North Dakota, Golden Glow and Gold Nugget. It was a fairly good year, and since we had used Golden Glow, Gold Nugget and Salzer's North Dakota we were very sure we had the best maturity obtainable. On this farm there is a considerable amount of coarse fodder produced from crops other than corn, and in that case we decided that corn for silage should reach the proper maturity before it was put in the silo, in order to have a better quality of feed.

In 1916 I had the pleasure of making the report on the field tests at Keswick, Simcoe County, across the lake from my own home county. This was the standing: 1, Longfellow; 2, Salzer's North Dakota, and Golden Glow; 3, White Cap Yellow Dent; 4, Bailey; 5, Leaming. Salzer's had a little more tonnage than Longfellow, but Longfellow is really a little ahead of Salzer's in maturity. We find that the earlier strains of the varieties are more suitable to the later districts and that is why we found there was an advantage in favor of the flints, especially from the maturity standpoint, that the nearest rival to the flints, in maturity, was the Golden Glow.

I am indebted to a lecturer at the Macdonald College for these figures on the maturity and moisture shown by six different varieties under test. Mastoden, maturity 59, moisture 17; Leaming, maturity 73, moisture 15; White Cap Yellow Dent, maturity 78, moisture 13; Salzer's North Dakota and Longfellow, maturity 80, moisture 14½; King Philip, maturity 82, moisture 14½. When you figure there is only about three per cent. difference per acre between Mastoden and the Flint varieties, and you really have in the Flint varieties just as good or better material for purposes of silage than in Mastoden, White Cap or Leaming, the odds are about even.

In conclusion let me state that it has been difficult for me to secure actual data in regard to the results obtained on tests of the different varieties of dents compared with flints. The results are based mostly on field inspection, but the choice of varieties best suited for the production of ensilage must be determined locally by the ensilage growers in the different districts. It is sufficient to say that under existing circumstances, many of the growers of ensilage corn, especially in the late districts, will get better results from flint varieties, but as a variety of dent for late sections the Golden Glow is the nearest rival that the flint corns have.

In this regard it seems to me that the question of the introduction of corn from the Counties of Essex and Kent into the eastern district is a question of advertising and shipping the best seed corn produced in this district into our eastern district, in order to demonstrate to our ensilage growers what the different varieties of corn will do. I believe most of the officials who have been visiting this section are satisfied that especially in normal years the corn district can produce first-class seed to supply the whole Dominion, and that ensilage growers will be well advised to pay more attention to the maturity point. In fact, the whole matter lies in the question of getting this corn to the east, and it is up to the corn growers to use every pressure they can in order to introduce the material which is grown here into the eastern sections for the ensilage grower.

If you would like me to refer to the "Seed Control Act," I will do so. The question of the control of seed corn in Canada is one that has been receiving considerable attention for some years. I might put it in another way. It has been discussed and talked about, but the control has not received the attention it should have. The Canadian Seed Control Act was the only Act we had having any control over the quality that might be shipped according to law. Since 1911 the corn was required only to have the quality of germination. Seed corn was supposed to have a percentage of germination equal to 95 per cent.; that is, if corn germinated 95 per cent. it was supposed to be up to standard for corn; for seed corn to be shipped to the east, if it would germinate two-thirds of that percentage which is somewhere in the 60's, it could be legally sold as seed corn. Now, that same law exists to-day, but it is an option now. Corn growers who wish to ship according to grade may do so by adhering to the following regulations: No. 1 seed corn, whether on the cob or shelled, when sold, offered or exposed or held in possession for sale for seed in Canada, shall be plainly marked with, first, the grade, variety name, and, second, the Province or State where grown. No. 1 seed corn on the cob shall consist of sound, well developed ears that are reasonably uniform in type and typical specimens of the variety named, shall be well cured and shall be capable of germinating at least 95 per cent. Now, No. 1 seed corn shelled shall consist of sound, reasonably uniform and typical kernels of the variety named, shall be well cleaned and graded, shall contain not more than 16 per cent. moisture and shall be capable of germinating at least 95 per cent.

That grading, I understand, is optional, but parties who wish to make use of it may ship corn according to those grades and it is the intention, I believe, of the Departmental officials interested in seed corn for ensilage purposes, to advertise the fact of this optional grading and I consider that the man who can make use of that clause for shipping should be able to gain a preference in the eastern market.

MAINTAINING AND IMPROVING THE FERTILITY OF THE SOILS OF ESSEX AND KENT.

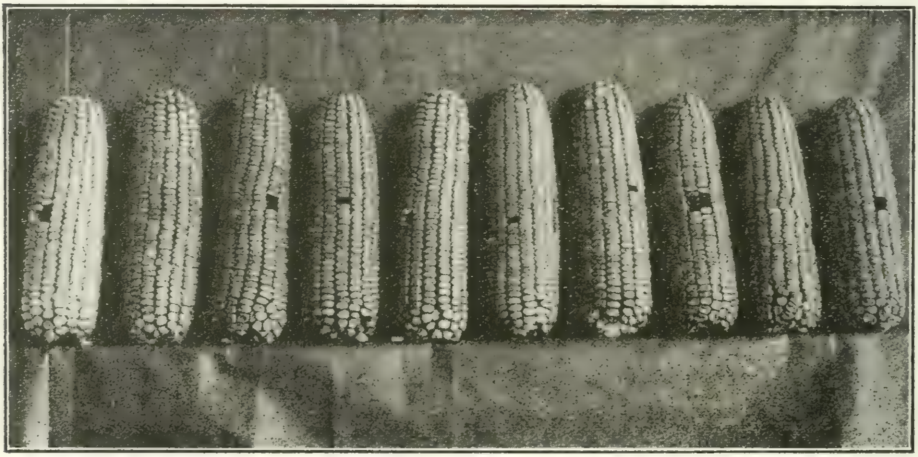
PROF. R. HARCOURT, GUELPH.

The title in itself might infer that there is some soil in Essex and Kent that if we maintain its fertility we will be doing very well, and I thought we might expect that to be true, that there is some soil in this part of the world that if we could retain its original fertility we could look for very good results.

Possibly before taking the matter of the fertility up, it might be well to realize the fact that it seems as though a great many people do not fully realize that a plant requires food the same as an animal, and that that food is gotten practically all from the soil. How often people expect that a plant is going to grow somewhere there in the soil, and forget the fact that the plant must have food as well as the other. And practically all but the carbon that is gotten from the air, all the food of that plant is taken from the soil. And further, there is another point, and that is, that the food from the soil must be brought into soluble form, an available form in which the plant can get it before it can be of any use to the plant. It is a fact that in practically all of the soil of this country we have not less than 40,000 pounds of potash to the plowed acre of land, and we have that much in every six inches of earth, as we go down in that soil. Most of the soil in this neighborhood will have at least 3,000 pounds phosphoric acid in a plowed acre and perhaps more as you go down. It is not because we have a lack of soil that we have a lack of production, nor because we have not the proper amount of food. We have this vast amount of plant food in the soil—40,000 pounds of potash to the acre. A crop of corn will perhaps take 15,000 pounds out of the soil. There is any amount of it available, lots of these substances, and it is not any question of lack of growth because of lack of plenty of food. Some of this consists of plant food, but it is the question of the availability of the plant food. In this part of the country you will find that you have a soil that corresponds very well with the prairie soil of the west; that is, it is rich in organic matter to a great depth, which makes it particularly a rich soil. The greater part has been laid down under water. The section at Guelph never was under water. But glacial lakes covered this property at one time, and a great deal of this was laid down by sediment from the Thames River, the same way as we are getting Lake St. Clair filled up at the present time. But we have, here and there, throughout this area outcrops of another type of soil altogether. It seems to have been some old material left by the glacier, where it has come to the surface or where it has not been covered by the glacial deposits. That is the yellow clay that is found in portions of this district.

We have mineral plant food substances derived from the rock materials that have been broken down, mixed with a certain amount of organic matter. We must have a certain amount of organic matter mixed in, and as that organic matter decays we get the plant food brought into an available form. The main constituents, as you know, are nitrogen, potash and phosphoric acid. Nitrogen we have in the air in abundance. There is possibly 7,000,000,000 pounds of nitrogen over every acre of land, and yet if you want to buy nitrogen you pay a good price for it. We have an abundance of nitrogen in the air, but the plant cannot use the nitrogen directly. We have those who go through the country at times who say there is no need of nitrogen in the food of the plant, who claim also that there is no need of nitrogen in the food of the animal, or protein substance. One man told me he did not need nitrogen, and did not need protein, and had not eaten meat for years, and did not need meat, because every time he opened his mouth he got all the nitrogen he could stand. I said I only wished I could get my food by simply opening up my mouth. But the plant does need nitrogen, and although we have these millions of pounds of nitrogen in the air it does not do us much good in the feeding of the plant except as we get certain crops which are able to gather this nitrogen and put it in the ground. So we have our legumes, crops that are able to gather this nitrogen and put it in the ground and it is in the decay of the organic matter that we store up the nitrogen in the soil. It is the amount of nitrogen that we have in that decaying organic matter that is the source of enrichment to the soil. As you know, organic matter is a wonderful factor in affecting the pliability of the soil and we want an abundance of organic matter if for no other reason than that it makes it easy to work the soil. This organic matter in its decay furnishes the acid which brings the abundance of mineral matter that we have in the soil to available use; that the presence of decaying organic matter—all the potash in the soil, all the nitrogen available—is of little use, because it is the decay of the organic matter which brings the plant food into available form, and if I can only get this point to be fully realized throughout the country—the great need of organic matter—I will feel I have done a good deal.

But often you will find that the supply of organic matter is being depleted, because cultivation hastens the depletion of organic matter. You know what crops were obtained when the land was first reclaimed from its virgin condition. Or, we have lots of organic matter, the chief agent, and we have lost the substance which brought about the availability of the other substances. It does not matter whether we have 40 pounds or 40,000 pounds of potash in the land if we have not the agent to bring it into solution. So the great use of organic matter, possibly its greatest use, will be in these three factors: that it is a source of nitrogen, a source of physical addition to the soil, and it also furnishes the acid which brings the plant food into available form. So you cannot over-emphasize the importance of organic matter in the soil, and as surely as we lose the organic matter we are losing one of the greatest agencies of bringing the plant food to an available form.



First prize 10 ears, Bailey, exhibited by Hugh Coatsworth, Kingsville, at Corn Show at Chatham, January 13-16, 1920.

And that emphasizes the need of the use of stable manure. No material applied can ever take the place entirely of farmyard manure, because no matter what we have there we must have organic matter, and farmyard manure provides that. And I believe that it does something beyond that. It also brings in the organisms that bring about the decay of the soil. So, if we are to keep the soil in good condition we must always keep up this constituent, and then we must bring about this decay. If, at the same time, while we are wishing to keep up the organic matter in the soil we must do everything that we can to hasten its decay if we are going to get the best crops. It is in its decay that we get the nitrogen, so we must do everything we can to hasten the decay of the organic matter and at the same time we must do our best to keep up the supply of organic matter. The amount of organic matter then is the foundation of our fertility.

Next to that I would place lime—having in the soil an abundance of lime. Possibly next to nitrogen there is no one thing that is depleted easier than lime. As soon as we begin to till the soil we hasten the departure of that. Lime is brought into solution so rapidly by the acid forms of decaying matter, by carbon dioxide, and all water is hard because of the lime that runs in it. The river water is hard water because of the lime that is in it. The lime is worked down in our soil very rapidly, and we find that is true, through our experiments, that the surface soil of our Province is low in lime. You go down twenty inches and you will find plenty of it; but in the upper portion, in the surface soils it is deficient, and this means that it is in a waxy condition, in a condition that it is hard to work, and it is this waxiness that we don't want. In light soil it seems there is no body to it, it falls apart. It is very easy to see the effect of lime on most of our soils. Lime I place second, because lime and organic matter are the two substances which are most readily lost from the soil and which are the two substances we can replace more cheaply than any other substances required by our fields. We can get the organic matter by digging up the soil and turning in the crops to decay and furnish the organic matter and we can supply the lime by application, so these are the two factors which should come first; build up the organic matter and build up the lime.

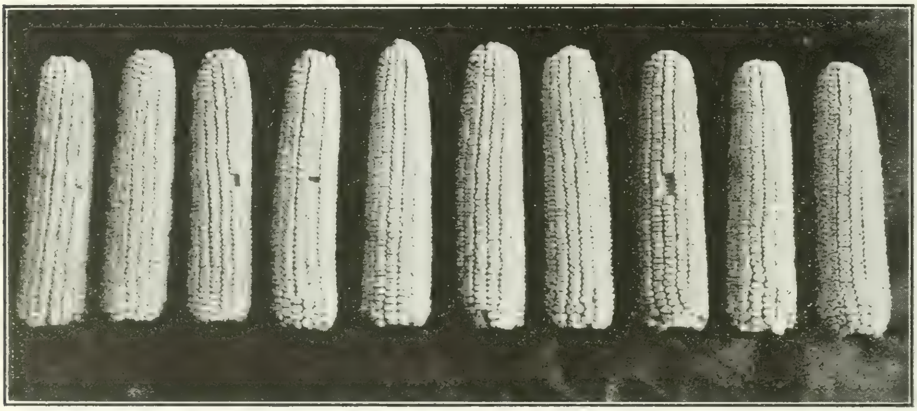
After these we can begin to get results by the use of other substances. Next to these, I believe, as outstanding in its effect is phosphoric acid. Where you have your lime and your organic matter, if there is any one thing in addition that is needed more than these it is phosphoric acid, because that constituent is in the soil in smaller quantities than the others because the crops in many cases have difficulty in getting it. Then, so far as improving the soil's fertility is concerned, I look upon organic matter and lime as being the two prime factors and along with these and for the building up of the soil, use phosphoric acid. Nature has provided us with many means of bringing together the nitrogen by means of the crops, and putting it in the soil and that is our first source of nitrogen. And in order to secure sufficient nitrogen by this form of applying nitrogen, we must provide special crops.

One thing in connection with soil fertility is the fact that our crops differ so widely in their needs and in their ability to get what they want out of their soils, so what may be good food for one crop is not necessarily the best food for another. They differ so widely in their actual powers of getting what they require. So we at once recognize the fact that if we have a cereal crop its greatest difficulty is in getting its phosphoric acid and nitrogen, whereas in a potato crop its difficulty is in getting its potash. In a general way, I would like to help you. I would rather have a discussion than go on talking in generalities. It will bring it down nearer to what you want if you will ask me questions about your difficulties.

Q.—I understood there was a survey made of the soils in this section last year? Was it found that we lacked lime to any extent, or phosphoric acid?

A.—We went over this district and we have it charted. We have classified the soils on the basis of their geological origin. That would naturally influence their fertility. Then we have sampled these soils and these are under chemical analysis now, and we wish to follow this by means of demonstration plots on the various types of soils to ascertain the exact result of different means. You have some outstanding types of soil, and these are what we want to work with. We want to know something about them from the standpoint of their composition and we need to know more than that because the amount of plant food in the soil does not in fact indicate its fertility. It does not show the amount of crop you may grow from it. There is the other side of it. The amount that you render available. That is what we want to experiment with on the different soils.

In addition to the other points is one that we must always have and that is a comfortable home for the plant. The soil is the home of the plant, but unless we have a home that is comfortable, so it can get all it wants for its life process—water, air, suitable temperature—we cannot get the growth of the plant as we should have it. Plants require exactly the same things as we require ourselves. The home must be made comfortable by irrigation or we will not get our results.



First prize 10 ears Wisconsin No. 7, exhibited by John Parks, Amherstburg, at the Corn Show at Chatham, January 13-16, 1920.

Q.—Regarding lime, would you advise burned lime, applying it from a commercial standpoint, or ground limestone?

A.—Burnt lime will always give you quicker results than ground limestone rock, but experiments that have been conducted over a considerable period of time are evidence that ground limestone rock will give you the best result in the end. Naturally the burnt lime is quicker in its actions, but it hastens the decay of the organic matter perhaps unduly. We want to build up the organic matter in order to use it as fast as we can, but in a light soil that is well irrigated burnt lime will perhaps unduly hasten the decay of the organic matter. If you have a heavy clay soil I would not be so afraid of using fresh burnt lime. I would be inclined to use it the first time, perhaps. I would not want to use fresh burnt lime on a light soil. I distinctly recommend there that you use ground limestone rock.

Q.—How much to the acre?

A.—Of the burnt lime anywhere from half a ton to a ton would be a good application.

Q.—To the acre?

A.—Yes. Of the ground limestone rock you require just about double what you do for the other to get the same reaction in the soil.

Q.—What about sweet clover?

A.—Clover is a legume, whether it is one form or another it requires an abundance of lime in the soil. You need to have the lime there to get a good strong growth. We have had men say that because certain circumstances have taken place that they have plowed up their old crop and started this year again. Last year was very dry, this year late into the fall they were nervous about what may happen in the spring. These three cases happened to be in land that is from shale, and that is one soil that it is difficult to have a clover crop live through the winter in. It is lacking in lime, that soil, and I have advised them to put on limestone rock now so it will be there in the spring. I am afraid to recommend fresh lime because it may have a bad effect upon the land, or they can use some form, if they can afford it, of phosphoric acid, either in the form of basic slag or bone meal along with their lime.

Q.—Where can you get limestone rock?

A.—Limestone rock is gotten in a great many different places over the Province. Your nearest place would be the Beachville quarry. I think it is about $2.25 a ton f.o.b. Beachville. The freight would be $1.25 a ton from Beachville here, I imagine, or a little more. The question of freight, of course, is a big item in many cases with limestone rock. In some cases it is shipped in bags which again increase the cost. Of course it is very finely ground, and ready for use.

Q.—About limestone. I got some few tons a few years ago and I put it on, three tons to the acre. We had a chemist around and he said our land was in need of lime, and I bought it and put it on, three tons to the acre. It cost us $4.25 laid down here, from Beachville, and as far as we can see we have not got any results yet. I put it on with a manure spreader, with about four inches of lime over one section and the balance of the field I did not touch. We could not see any difference in results. I was wondering if I had put on burnt lime would I have gotten results or better results. Perhaps I have been getting results but I have not noticed any on the part I treated.

A.—What is your soil?

Q.—Sandy loam.

A.—Well there is a part of this district that doesn't need lime. There is a narrow ridge around through the district that doesn't need any lime, but most of the land to the south and west needed lime. That is a point of analysis, of course. If you have lime on the soil that does not need it you would not get results, of course.

Q.—Well, this gentleman tried it. I am not a chemist, but he told me to get him a sample of soil, and I brought it to him and he took it and a bottle out of his pocket and he poured a little of what was in the bottle on it and he said if there was lime in it it would boil, and I said he was an agent. We've been rather leary of agents, but Beachville lime I was told was one of the best limes we could get so we tried it. I did not get any results that I could see, and my neighbor who applied 1½ carloads has not got results either. That land was put into corn. Oats followed, and wheat followed the oats and then clover.

Prof. Harcourt: Some crops, you know, are very, very much more resistant to acids than others. Our cereals, like oats and wheat, will not respond and will grow in a soil without acid much more readily than clover. Potatoes will grow in a soil with little lime, strawberries will grow in soil without lime. Potatoes are legumes. But I hope you will see the results in your clover crop. If you had no results from it yet, it may come now.

Q.—The clover I sowed where I had the lime wasn't as good as it was where I had not used it, and that is what I wanted to know. Now, whether the fertility had all gone out of my land before it got to my clover I do not know. I have a good patch of clover but if I had a dry season, and I got a better crop where there wasn't any lime, I wondered if it would dry my soil out.

A.—Lime in itself will not do much. Lime with manure will hasten the decay. You have not had any indication of the hastening process?

Q.—Not a particle. And my neighbor who has used a carload or more, and even bought implements to put it on with, which are now sitting there, doesn't intend to use it again. He said it was his aim to see if he could get a catch of sweet clover, which we supposed would grow on anything so long as it was sown, and he didn't do at all well. So there's where I am out with lime. I think it is a great thing some places, but I can't find out where.

A.—Well, your property evidently does not require lime, when it does not respond to it, but there is plenty of soil that will respond to lime that needs it. And there is much of our soil that will respond to the use of phosphoric acid.

Q.—I just might mention that our land is very susceptible to phosphoric acid. As soon as we put on the slightest dose we get results.

A.—We have seen results from phosphoric acid on the soil of a crop of wheat, where the yield was raised from ten to forty-five bushels by phosphoric acid. In another case it was raised from eighteen to forty-seven bushels by the use of phosphoric acid. It is this problem I am hoping to work out, and I hope when we get around to it we will take sufficient ground to carry out our experiments and go not only far enough to find out that it requires phosphoric acid, but also what form of phosphoric acid is cheapest to get the required results. These are the problems we want to work out. I have seen very marked results from lime over soils that lie through Halton and Peel Counties, on soils upon the margin from the escarpment, around Grimsby, and the result made it altogether different from the former cultivation. It changed the waxiness. Alfalfa would not grow there on the surface soil, but once they got down into the bottom soil they would grow strong and hearty because they were down to the lime. I would say there was something materially wrong with land that won't grow sweet clover. Of course, soil that requires phosphoric acid would not give results from the use of lime, unless you also had phosphoric acid. I just want to bring out that point, that in the application of plant food to the crop, you have got to have a balanced ration, just as much for the plant as for the animal. There are ten constituents that are absolutely necessary to the development of the plant, and if they are not there in the required amounts you cannot get the results. The one that is there in the smallest quantity is often the determining factor. We must have an abundance of all, and if we lack one, that is the limiting factor. It is necessary to have a proper balance to get the proper result.

Q.—I tried lime and phosphoric acid together.

A.—How much phosphoric acid?

Q.—Two hundred and fifty pounds.

A.—What form?

Q.—Acid phosphate, and I couldn't see any great results. I seeded it down with hay and it wasn't much good.

A.—In the neighborhood of Welland we have had double the results from lime.

Q.—You could see the difference in the stubble where the phosphoric acid was and where the lime was.

A.—At Goderich one man told me that he left the width of the drill without phosphoric acid, and on his particular soil there was no crop there at all. But, in that district their animals show a lack of something in their food. They chew bones, fences, anything at all, to get the something that is lacking. One man told me he always put 1,000 feet of lumber in for the cattle to chew on. I think that likely if there was lots of phosphoric acid in the ground they wouldn't need the lumber.

There is no doubt in my mind that if we could get the organic matter to get at the lime and nitrogen we would be all right. Phosphoric acid is one of the main constituents that will give you good results, and where a soil is deficient in lime, I would want the lime, because it is cheaper than the other and where lime is not required it is not necessary.

Q.—In a wheat field where it was not all manured, it wouldn't grow until phosphoric acid was put on where the manure stopped, then it grew rapidly. You could not tell where the difference was.

A.—There was no difference between stable manure and phosphoric acid. Is that what you mean?

Q.—Yes, you couldn't see any difference.

A.—I would not want to argue with you that you could do without stable manure and buy acid phosphate. Most of our heavy ground requires phosphoric acid, because phosphoric acid is held in a very soluble form and the soil will quickly respond. In most cases the light soil will lose its lime very fast. Lime has a good deal to do with the body of the soil.

Q.—Will phosphoric acid applied to the land have a tendency to make it harder to work?

A.—I do not think so. My recollection of the tests is that it will double the organic action on the other things. Phosphoric acid alone won't continue to give the results. You have to have the others along with it.

RESOLUTIONS.

The following resolutions were carried:

Whereas there are breeding stations for all cereal grains in various parts of Canada and in Ontario, and whereas there are no breeding stations for crops peculiar to Southwestern Ontario, especially the corn crop, and whereas this part of the Province is especially adapted for the growing of many special crops as well as grains, resolved that this Convention go on record as favoring an Experimental Station for all crops, especially corn.

Since there is a large amount of commercial fertilizer being used on all crops by the farmers in this part of Ontario, and since to our knowledge there has been no experimental work done to ascertain the practical results from its use on corn, we wish to express ourselves as favoring some experimental work being carried on with the commercial fertilizers on corn by the Ontario Department of Agriculture, with a view to publishing the complete information gained from them.

Ontario Department of Agriculture

Fiftieth Annual Report

OF THE

Entomological Society

OF ONTARIO

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

Printed by
THE RYERSON PRESS

To His Honour, LIONEL H. CLARKE,
Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration, the Report of the Entomological Society for 1919.

Respectfully submitted,

MANNING W. DOHERTY,
Minister of Agriculture.

Toronto, 1920.

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Entomological Society of Ontario

OFFICERS FOR 1919-1920

President—Mr. Arthur Gibson, Entomological Branch, Dept. of Agriculture, Ottawa.

Vice-President—Mr. F. J. A. Morris, M.A., Peterborough.

Secretary-Treasurer—Mr. A. W. Baker, B.S.A., Lecturer in Entomology, O. A. College, Guelph.

Curator—Captain G. J. Spencer, B.S.A., O. A. College, Guelph.

Librarian—Rev. Prof. C. J. S. Bethune, M.A., D.C.L., F.R.S.C., Professor of Entomology and Zoology, O. A. College, Guelph.

Directors—Division No 1, Mr. J. M. Swaine, Entomological Branch, Dept. of Agriculture, Ottawa; Division No. 2, Mr. C. E. Grant, Orillia; Division No. 3, Dr. A. Cosens, Toronto; Division No. 4, Mr. F. J. A. Morris, Peterborough; Division No. 5, Mr. J. W. Noble, Essex; Division No. 6, Mr. J. F. Hudson, Strathroy; Division No. 7, Mr. W. A. Ross, Vineland Station.

Directors (ex-Presidents of the Society)—Rev. Prof. C. J. S. Bethune, M.A., D.C.L. F.R.S.C., Guelph; Prof. John Dearness, Vice-Principal, Normal School, London; Rev. Thomas W. Fyles, D.C.L., F.L.S., Ottawa; Prof. Wm. Lochhead, B.A., M.S., Macdonald College, Que.; John D. Evans, C.E., Trenton; Prof. E. M. Walker, B.A., M.B., F.R.S.C., University of Toronto; C. Gordon Hewitt, D.Sc., F.R.S.C., Dominion Entomologist, Ottawa; Mr. Albert F. Winn, Westmount, Que.; Prof. Lawson Caesar, M.A., B.S.A., O. A. College, Guelph.

Editor of "The Canadian Entomologist"—Prof. E. M. Walker, Toronto.

Delegate to the Royal Society of Canada—The President.

FINANCIAL STATEMENT

For the year ending October 31st, 1919

Receipts.		*Expenditures.*	
Cash on hand, 1917-18	$57 28	Expense	$25 50
Advertisements	46 00	Printing	1550 07
Back Numbers	192 10	Annual meeting	105 65
Members' Dues	124 40	Annual Report	25 00
Subscriptions	470 11	Salary	100 00
Bank Interest	2 64	Library	3 50
Government Grant	1000 00	Cash on hand	82 81
	$1892 53		$1892 53

To balance due on printing	$230 81
By cash on hand	82 81
Net Deficit	$148 00

Auditors: L. Caesar.
J. E. Howitt.

Entomological Society of Ontario

ANNUAL MEETING.

The Fifty-sixth Annual Meeting of the Entomological Society of Ontario was held at Ottawa on Thursday and Friday, November 6th and 7th, 1919. The chair was occupied by the President, Prof. L. Caesar.

The following members were present: Prof. W. H. Brittain, Truro, N.S.; Mr. George Sanders, Annapolis Royal, N.S.; Mr. J. D. Tothill, Fredericton, N.B.; Prof. W. Lochhead, Macdonald College, Que.; Mr. A. F. Winn, Westmount, Que.; Dr. J. A. Corcoran and Mr. G. C. Moore, Montreal, Que.; Rév. Father Leopold and Mr. F. Letourneaux, Oka, Que.; Mr. C. E. Petch, Covey Hill, Que.; Dr. C. G. Hewitt and J. McDunn; Messrs. A Gibson, J. M. Swaine, C. B. Hutchings, E. F. Strickland, F. W. L. Sladen, C. B. Gooderham, J. I. Beaulne, L. S. McLaine, V. Kitto and Drs. J. McDunnough and S. Hadwen, Ottawa, Ont.; Mr. F. J. A. Morris, Peterborough, Ont.; Mr. H. F. Hudson, Strathroy, Ont.; Mr. W. A. Ross, Vineland, Ont.; Mr. N. Criddle, Treesbank, Man., and Mr. R. C. Treherne, Vancouver, B.C.

Among the visitors were Mr. C. L. Marlatt, Washington, D.C.; Prof. Cummings, Mass.; Prof. W. A. Macoun and Mr. E. S. Archibald, Ottawa.

Letters of regret at their inability to attend the meeting were received from the following: Dr. W. E. Britton, New Haven, Conn.; Prof. G. C. Crampton, Amherst, Mass.; Dr. E. P. Felt, Albany, N.Y.; Dr. H. T. Fernald, Amherst, Mass.; Dr. T. J. Headlee, New Brunswick, N.J., and Mr. J. J. Davis, Riverton, N.J.

On Thursday morning a meeting of the Council was held at which several matters of importance to the Society were brought up and discussed. In view of the increasing deficit shown by the Treasurer's Report it was decided that the fee to Canadian members of the Society, including members of Branches, be increased to $2.00, and that in lieu of all expenses only the railway fares of the Directors and Officers of the Society be paid.

In the afternoon the general meeting was called to order by the President and the proceedings commenced with the reading of the Report of the Council, followed by those of the Treasurer, Librarian, Curator and of the various Branches of the Society.

REPORT OF THE COUNCIL.

The Council of the Entomological Society of Ontario begs to present its report for the year 1918-1919.

The Fifty-fifth Annual Meeting of the Society was held at the Ontario Agricultural College, Guelph, on Wednesday and Thursday, December 4th and 5th, 1918. Owing to the prevalence of influenza, the meeting was held at a much later date than usual. The chair was occupied by the President, Professor Lawson Caesar, O. A. College. The attendance was very good, including members of the Society from Nova Scotia, New Brunswick, Quebec, Ontario and Manitoba. Mr. J. J. Davis, West Lafayette, Ind., Prof. J. P. Parrott, Geneva, N.Y. and Prof R. Matheson, Ithaca, N.Y., were welcome visitors.

By the kindness of Dr. Creelman, all those in attendance who came from a distance, were entertained in the College Residence during their stay in Guelph. This arrangement added much to their pleasure and comfort by affording many opportunities for social converse and by saving the time usually spent in travelling to and from the town. This hospitality was greatly appreciated by all present, and a hearty vote of thanks was accorded at the close of the meeting to President Creelman and to the Matron and the Superintendent of the Dining Hall.

At a meeting of the Council, held on Wednesday morning, it was decided to enlarge the pages of *The Canadian Entomologist* in order to be uniform with the standard size of bulletins, and also to issue ten instead of twelve numbers per annum, but at the same time to make no reduction in the amount of reading matter.

During the afternoon of Wednesday and on Thursday, a number of interesting and valuable papers were read and discussed, of which the following is a list:—Reports on insects of the year in their respective districts by Directors. Dr. A. Cosens, Toronto, Mr. F. J. A. Morris, Peterborough and Mr. J. W. Noble, Essex. Insects of the season in Ontario, by Mr. W. A. Ross, Vineland, and of Quebec by Mr. G. Maheux, Quebec; "Aphids; their human interest," by Dr. A. C. Baker, Washington, D.C.; "Insect problems in the Prairie Provinces," by Mr. Norman Criddle, Treesbank, Man.; "The recovery in Canada of the Brown-tail Moth Parasite, Compsilura concinnata," by Messrs. J. D. Tothill and L. S. McLaine; "The Life-history of a Hobby Horse" by Mr. F. J. A. Morris; "Present day problems in Entomology," by Mr. J. J. Davis; "Insects as agents in the dissemination of Plant Diseases," by Prof. Caesar; "The Cabbage-root Maggot," by H. C. Huckett; "Some chapters of the early history of Entomology," by Prof. Lochhead; "The Pear Psylla in Ontario," by Mr. W. A. Ross; "Our Garden Slugs," by Mr. G. Maheux; and "The Entomological Record for 1918," by Mr. Arthur Gibson. The reports of the Montreal, Toronto, Nova Scotia, and British Columbia Branches and of the Librarian and Curator were also presented and read.

The Canadian Entomologist, the official organ of the Society, completed its fiftieth volume in December last; the event was commemorated by a poem from the pen of Mr. F. J. A. Morris, which opened the fifty-first volume. This volume will be completed by the issue of the forthcoming November and December numbers. The semi-centennial volume contained 433 pages, illustrated by 12 full page plates and 21 figures in the text. The contributors to its pages numbered 57 and included writers in Ontario, Quebec, Nova Scotia, Manitoba, Alberta and British Columbia, and also in twelve of the United States. In the systematic articles there were described five new genera, 103 new species and four new varieties of insects. The series of papers published each month on "Popular and Practical Entomology" has continued to form an attractive as well as an instructive feature for the benefit of the general reader.

The number of members of the Society continues to be much the same from year to year. At the end of 1918 there were 179 on the list, including those on military service overseas. During the current year 26 have left us owing to deaths and withdrawals, while the same number of new members has been added to the roll.

It is again the sad duty of the Council to record the loss of one of our ablest and most active Entomologists, Mr. Frederic Hova Wolley Dod, of Midnapore, Alberta, who died of Enteric Fever on the 24th of July, at 49 Hospital, Chanak. His rank was Second Lieutenant in the Yorkshire Light Infantry attached to the

Macedonian Labour Corps. Though beyond the age prescribed for military service, his patriotic spirit compelled him to do what lay in his power for the welfare of the Empire. He accordingly went to England and succeeded in obtaining a commission and being sent out with a Labour Corps to Macedonia. Mr. Wolley Dod devoted himself to the Lepidoptera and became the highest authority in North America on the Noctuid Moths. He published in the *Canadian Entomologist* a long series of papers, extending over many years, on the synonymy and classification of this difficult family.

REPORT OF THE LIBRARIAN.

Owing to the lack of funds available for the purpose, only one book has been bought for the Library during the year now drawn to a close, namely, "Illustrations of the North American species of the genus Catocala" by Drs. Barnes and McDunnough, published by the American Museum of Natural History, New York. Seven bound volumes have been received, making the total number 2,292. A notable gift to the Library has been made by the Rev. Dr. Fyles, a Life-member and Ex-President of the Society. It is a large folio volume, handsomely bound in red leather and entitled "Illustrations in Natural History." It contains 107 water-colour drawings, chiefly of insects, but including a few depicting flowers, birds, reptiles and other creatures. It was presented by the author "as a token of his appreciation of the great pleasure and profit his connection with the Society has afforded him."

The Library continues to receive a large number of periodicals in exchange for *The Canadian Entomologist* and a great variety of bulletins, reports and pamphlets, many of which should be collected into volumes and bound for convenient reference.

CHARLES J. S. BETHUNE, *Librarian.*

REPORT OF THE CURATOR.

Mr. Eric Hearle resigned the position of curator last spring on account of his departure for British Columbia where he has been studying mosquitoes during the summer. In the meantime I have myself, assisted at first by Mr. H. G. Crawford and later by Mr. G. J. Spencer, looked after the collection. They are all in good condition and have been so throughout the year. Very few new insects have been added.

L. CAESAR, *President.*

REPORT OF THE TORONTO BRANCH.

October 9th, 1919.—The 23rd Annual Meeting of the Toronto Branch was held in the Biological Building of the University of Toronto.

The report of the Council showed that seven regular meetings and one annual meeting were held during the year, and that the average attendance was fifteen persons.

The annual meeting held on November 21st, 1918 was an open meeting for general discussion of entomological topics. But at the regular meetings a variety of papers were read, these were as follows:—

Dec. 6th,1918—"The Natural Control of Insects." By Mr. John D. Tothill, of Fredericton, N.B.

Jan. 9th, 1919—"Insects as Food of Trout." By Dr. W. A. Clemens.

Feb. 6th, 1919—"A Month on the Lower St. Lawrence." By Dr. E. M. Walker.

Feb. 27th, 1919—"Notes on the Biology of Stoneflies." By Mrs. W. A. Clemens.

Mar. 21st, 1919—"Insect Life in British Honduras." By N. K. Bigelow.

April 24th, 1919—"Investigations into the Habits of the Nymphs of the Mayflies of Genus Chirotonetes." By Dr. W. A. Clemens.

Also "Insectivorous Birds in Ontario." By Dr. E. M. Walker.

May 29th, 1919—"The Food and Feeding Habits of some Larval Hymenoptera." By Dr. A Cosens.

The report of the Librarian showed that many publications had been received during the year, and that these had been catalogued and filed.

The financial statement showed a balance on hand of $22.47.

It was owing to the epidemic of influenza in the autumn of 1918 that the annual meeting was not held until November.

Three new members: Mrs. W. A. Clemens, Mr. N. K. Bigelow, and Mr. H. Hesket were elected during the year.

After the reading of the annual report, one new member, Mr. R. W. Hall, was nominated and elected a member of the Toronto Branch.

The election of officers was then proceeded with, the results were as follows:

President, MR. H. V. ANDREWS; Vice-President, MR. S. LOGIER; Secretary-Treasurer, MISS NORMA FORD; Librarian, MR. N. K. BIGELOW; Council, DR. E. M. WALKER, DR. W. A. CLEMENS, DR. A. COSENS, MR. T. B. KURATA, MR. J. HANNIBAL, MR. C. K. BROBST.

When the annual business was finished the meeting was left open for general discussions in entomology and for notes and observations of the season. Those present at the meeting were: Dr. Clemens, Dr. Walker, Miss Ford, Mr. A. W. Baker of the Parent Society, Messrs. Andrews, Hannibal, Wright, Bigelow, Hall, Logier, and two visitors.

It is with sincere regret that the Toronto Branch record the death of Mr. Chas. M. Snazelle, who had been a member since 1912. During the last two years he had been unable to attend the meetings owing to business obligations in connection with war work. Mr. Snazelle was an enthusiastic student of nature both in entomology and in other branches, and his presence at our meetings will be greatly missed through the coming days.

SHELLEY LOGIER, *Sec.-Treasurer.*

REPORT OF THE MONTREAL BRANCH.

The 46th Annual Meeting of the Montreal Branch of the Entomological Society of Ontario was held in the Lyman Entomological Room, Redpath Museum, McGill University, on May 17th, 1919.

During the season 1918-1919 we held eight meetings with a total attendance of seventy or an average of nine per meeting. This was smaller than that of the previous season, which however was the largest on record because of a large public meeting held in 1918. We did not hold such a meeting during the past season, but nevertheless we had successful meetings and the interest was keen.

We have added several recruits to our ranks and hope they will all become ardent entomologists.

We held our regular Victoria Day outing to St. Hilaire and those who were able to go were rewarded as usual from this good collecting ground.

Our Society provided the programme at the Natural History Society's meeting in March.

The Treasurer's Report showed a balance of $158.61 on hand.

The following papers and talks were given during the year:—

1.	**Annual Address, Subject "Tables"**	**A. F. Winn.**
2.	**Collecting in California**	**H. F. Simms.**
3.	**Preparation of Hemiptera lists**	**Geo. A. Moore.**
4.	**Hemiptera taken at St. Hilaire, May 24th, 1918**	**Geo. A. Moore.**
5.	**Larvæ of Parnidae**	**Dr. F. S. Jackson.**
6.	**Notes on the Season 1918—"Hemiptera"**	**Geo. A. Moore.**
7.	**Argynus apachana St. and Edwards' Plates of A. nokomis**	**A. F. Winn.**
8.	**Economic importance of Samia Cecropia**	**Dr. Corcoran.**
9.	**Enodia portlandia Fab. at Oka**	**G. Chagnon.**
10.	**Zerene cæsonia Stal. the Dog's Head Butterfly**	**A. F. Winn.**
11.	**On which plant to collect Chalæpus nervosa Say**	**Brother Ouellet.**
12.	**The Milkweed Bug. Lygæus Kalmii Stal.**	**Geo. A. Moore.**
13.	**British Burnets**	**Lachlan Gibb.**
14.	**Muscoid larvae found in a human patient**	**Dr. F. S. Jackson.**
15.	**The Raspberry Root Borer or Clear Wing Borer, Bembecia marginata Han.**	**A. F. Winn.**
16.	**Notes on some localities outside Montreal Island**	**Brother Ouellet.**
17.	**The Periodical Cicada**	**Geo. A. Moore.**
18.	**Lantern Lecture, Nature Photography**	**G. H. Hall.**
19.	**Cercopidæ, Spittle Insects**	**Geo. A. Moore.**

Geo. A. Moore, *Secretary.*

REPORT OF THE BRITISH COLUMBIA BRANCH.

The 18th Annual Meeting of the British Columbia Branch was held in the biology lecture room at the University of British Columbia, Vancouver, on Saturday, March 15th, 1919. In the absence of the President, Mr. R. S. Sherman, owing to sickness, the chair was taken by the Vice-President for the Coast, Mr. W. Downes.

The Secretary-Treasurer, Mr. Williams Hugh, presented his financial statement and report as librarian. The morning session included the following programme:—

Discussion on Aims and Objects of the Society.
Resolutions.

Notes on Tubuliferous Thysanoptera	**R. C. Treherne.**
Stray Notes on B. C. Lepidoptera	**E. H. Blackmore.**
Common Tree-hoppers of B. C.	**W. Downes.**
Some descriptions of New Species of Mycetophilidae	R. S. Sherman.

Afternoon Session.

A Swarm of Vanessa californica	J. W. Cockle.
The Lycaenidae of B. C. (Illustrated with Specimens)	E. H. Blackmore.
The Locusts of B. C.	E. R. Buckell.
Discussion by Thos. MacKenzie, B. C. Commissioner of grazing.	
Notes on European Foul Brood in B. C.	Williams Hugh.
Cutworm Control	Mr. H. Ruhman.
Life Histories and Control of Our Strawberry Insects	W. Downes.

Evening Session.

The Onion Maggot	Mr. H. Ruhman.
Tent Caterpillars, their life-history and control	A. B. Baird.
The Alfalfa Seed Chalcid	E. R. Buckell.
Insect notes of the year, leading a discussion on control of injurious insects affecting Agriculture	R. C. Treherne.

The officers elected for the year 1919 were as follows:—

Hon. President	F. Kermode, Victoria
President	E. H. Blackmore, Victoria.
Vice-President (Coast)	R. S. Sherman, Vancouver.
Vice-President. (Interior)	J. W. Cockle, Kaslo.
Hon. Secretary-Treasurer	W. Downes, Victoria.
Advisory Board	Messrs. Lyne, R. C. Treherne, G. O. Day, John Davidson, L. A Breun.

Among the resolutions passed was one providing for prizes at the principal fall fairs for the best exhibits of insects collected by students attending the public schools, $100.00 being voted for this purpose from the Society's funds.

The Society at the present time is in a flourishing condition and although interest in the Society's work diminished during the war, in which two valued members lost their lives, we have since been strengthened by the addition of several new members and signs are not wanting that interest in the work of the Society will continue to increase.

W. Downes, *Hon. Secretary-Treasurer.*

REPORT OF THE NOVA SCOTIA BRANCH.

The Fifth Annual Meeting of the Entomological Society of Nova Scotia was held at the College of Agriculture, Truro, on July 31st. The morning session was devoted to a report of the Society's work, financial statement, and the general business of the Society. During the afternoon and evening a number of papers were read by various members.

The following officers for the year were elected:—

Honorary President	Dr. A. H. McKay, Halifax.
President	W. H. Brittain, Truro.
Vice-President	J. D. Tothill, Fredericton.
Secretary-Treasurer	A. Kelsall, Annapolis Royal.
Asst. Secretary-Treasurer	E. A. McMahon.
Committee	W. N. Keenan, G. E. Sanders. Miss Dora Baker.

During the year, No. 4 of the Proceedings of the Entomological Society of Nova Scotia was issued, a publication comprising about a hundred pages. Besides including a great deal of new data on the insects of the Maritime Provinces, it contains several articles on comparatively new, or modified, insecticide-fungicide combinations, which are proving to be of considerable economic value.

A. Kelsall, *Secretary.*

REPORTS ON INSECTS FOR THE YEAR.*

Division No. 3, Toronto District—A. Cosens.

The frail structure of many insects adapts them only to the warmth and soft breezes of summer, not to the cold and bitter gales of winter. In bridging the period of low temperature the casualties must be heavy among these fairy-like creatures of sunny, dreamy days. Last winter was so uniformly and extremely mild that the hibernating conditions of many groups of insects were no doubt ameliorated, and, as a result, an unusually large number of survivors awakened into activity at the beginning of the season.

This may explain in part the abundance of several species of butterflies. On May 7th, which was a very warm spring day, many specimens of the Red Admiral, *Vanessa atalanta,* emerged from their winter hiding-places. Dozens of them were skimming lazily over the lawns or flitting about among the blossoms of the Norway maples. From that date throughout the whole summer these butterflies were exceedingly numerous, more so than for many years. Later in the season, the Painted Lady, *Vanessa cardui,* also became very plentiful and continued so until nearly the end of August. The Banded Purple, *Basilarchia arthemis* usually a rather scarce butterfly in this locality, was quite frequent along the paths in the parks. Its relative, the Viceroy, *Basilarchia disippus,* never a rare insect here, was this summer, however, uncommonly abundant.

The hibernating habits of these last two species are such as to point to the possibility of a close relation between their unusually large numbers and the mildness of the winter. As soon as the nights begin to become cool, the caterpillars of the butterflies commence the preparation of their winter quarters. The larva selects a suitable leaf on its food plant, and bites off the blade on each side of the midrib, leaving only two flaps at the base. The whole of the leaf remaining is then covered with silk, and the flaps are drawn together so as to form a cosy silk-lined nest. To prevent the leaf from falling some of the threads of silk, that covered its stalk, were passed around a branch of the plant. Into this Esquimaux-like sleeping-bag the caterpillar then crawls, and remains in its snug retreat until the spring sun has burst the buds on its food plants.

Gardeners state that the Cabbage Butterfly, *Pieris rapae,* has been very troublesome this season. It is only seldom that the southern relative of this form comes so far north, but on August 1st, I captured a much-worn female specimen of *Pieris protodice.* The latter species has never proven injurious in Ontario, but is occasionally numerous enough to become destructive in some of the states to the south of us. Throughout the whole of its range, however, this native American butterfly is being gradually driven out by the alien from Europe. The latter, by ovipositing earlier and raising more broods a year, has been able to gain possession of almost all the available, cultivated Cruciferous plants, limiting the former to the wild species only.

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*For Report of Division No. 6, see p. 83.

August 1st must have been a red-letter day in the entomological calendar as I find in my notes that on that date I captured also the Zebra or Papaw Butterfly, *Iphiclides ajax* var. *ajax*. A strong southern wind that had been blowing for a couple of days may account for these rare stragglers from the south. Speaking of Papilios, it is interesting to note that the Pipe-vine Swallow-tail, *Papilio philenor,* is becoming less rare in this district. This is probably due to the increasing popularity of its favourite food-plant, the Dutchman's Pipe, *Aristolochia macrophylla,* for ornamental purposes.

Although many species of butterflies were exceedingly common this season the Monarch, *Anosia plexippus,* was much less plentiful than usual. I saw only four specimens, and these late in the year—September 7th, 9th and 14th. In a note just received from Mr. C. W. Nash he states that he saw a specimen on each of the dates, September 26th, October 4th and 5th. These butterflies, that have visited us so late are probably members of the rear guard of the migrating columns on their treck to the south from a more northerly summer home.

The Entomological season was opened on April 5th this year by the finding of four specimens of the Ground Beetle, *Calosoma calidum.* In spite of the early date, a pair of these insects were already mated. On two occasions this summer I have seen the larvæ of Ground Beetles attacking earthworms. The beetles were finding their prey rather large, and one at least of the worms escaped.

Some variation in the conditions has proven favourable to the production, this season, of the gall *Andricus operatola* Bassett. On the ground, under several oak trees, infested acorns were plentiful. In previous years it has been rarely that I have found the gall, and never before attached to the acorns. The specimens obtained had dropped from the acorns which had remained on the trees.

This pointed, tooth-shaped gall is enclosed between the cup and the acorn, but originates from the latter. In general the gall projects only slightly above the edge of the cup. Often four or five galls are found irregularly spaced around the base of an acorn. In this locality both red and black oaks act as hosts.

From the galls, that have remained on the ground over winter, producers emerge early the next spring.

DIVISION NO. 4, PETERBOROUGH DISTRICT—F. MORRIS, PETERBOROUGH.

One or two items only seem worthy to be reported in this season's collecting. The interruption of school work owing to influenza, in October and November, necessitated the extension of the summer term till the end of June; almost immediately after, your director passed to examination work till late in July. Field observations were very few and not of much value.

Among the collections handed in by pupils at the Peterborough Collegiate was noticed a very rare borer in alder, *Saperda obliqua,* and a member of the staff captured three or four specimens of *Phymatodes dimidiatus* in the latter part of May, the captures being made in his woodshed. A few days after a pupil brought in a specimen of *Saperda puncticollis* just captured on Virginia Creeper. This insect had been taken two or three times by pupils and I was very anxious to make observations. Enquiries had always pointed to Virginia Creeper rather than Poison Ivy as the food plant. The Science teacher accordingly hurried over to examine the vine and captured four or five more specimens, as well as specimens of *Psenocerus supernotatus* emerging from dead stems of the same plant. On learning of the discovery I hurried over to our opposite neighbor's where the low wall is overgrown with the plant in question. I captured over a score of the first insect and three or four of the second. Casual search on four or five other vines of Virginia Creeper at different parts of the city secured further specimens of both insects. The beetle is quite the prettiest of the Saperdas, but small, shy, and easily overlooked. In the hot sun it often climbs out to the surface of the upper leaves, but takes to wing very readily and drops as readily into the heart of its shrubbery. The period of emergence and activity lasts about a fortnight; from May 27th to June 10th. Large numbers of a clearwing moth were observed frequenting blossoms along the edge of a corduroy road through the heart of a tamarac swamp, but so far the insect has not been determined. No other insects of interest have been noted by your observer this season.

DIVISION NO. 5, ESSEX DISTRICT—J. W. NOBLE, DEPARTMENT OF AGRICULTURE, ESSEX.

ATTACKING FIELD CROPS. Hessian Fly has been very conspicuous in its work this year, large acreages of wheat have been cut down in yield 50 per cent. and even some of the later sown wheat planted in the fall of 1918 have been badly attacked. A great deal of injury has already been noticed this fall. It is altogether likely to be as bad in 1920 as this year. Grasshoppers and crickets were quite bad in June owing to extremely dry weather prevailing at that time. Considerable damage was done to cereal grains and some other crops by these insects. Wire-worms and cutworms did a great deal of damage in the spring of 1919. Cut-worms have been quite successfully controlled by the poison bran mixture.

ATTACKING FRUIT TREES. The Codling Moth has possibly never been worse in this county owing to the exceptionally favourable season for its development. Even well-cared-for orchards are heavily infested with this insect. Where the spraying was omitted in the season of the year three weeks after the blossoms have fallen the sideworm injury is especially conspicuous, but in well-cared-for orchards that received the calyx cup spray very little injury has been noticed from the blossom end. A considerable number of specimens at work of Plum Curculio have been submitted for identification, but commercially speaking, the Codling Moth has been much the worst insect on fruit trees.

FRUITS AND VEGETABLES. The Onion Marsh at Leamington where about 500 acres were grown this year had considerable trouble from both root maggot and onion thrips. Very little success has been obtained from trying to combat either of these pests.

Aphids were very bad this season on cucumbers but did not seem to do much damage to melons. The general use of Black Leaf 40 and tobacco decoction have been very successful in combating these insects. Tomatoes have been greatly infested this year with Tomato Sphinx, crickets and grasshoppers. Cauliflower plants have suffered considerably from crickets gnawing the stems above the roots. Considerable dame was done, but wet weather checked their depredations before poison solution could be tried.

Tobacco was attacked by the usual pests, the tobacco sphinx being very plentiful this year. Dusting the small plants with arsenate of lead, spraying the partly grown plants with solution and spraying the larger plants with the dust gun when they were too large to allow the spray machine to be used successfully, controls these worms. Wire-worms did an exceptional amount of damage to tobacco plants this year and made the stand very uneven in many cases.

GREENHOUSE INSECTS. The usual greenhouse insects have been reported, but where proper methods have been used very little trouble has been reported. Greenhouse white fly, greenhouse aphids and nematodes are among the greenhouse man's worst enemies.

ENTOMOLOGICAL PROGRESS IN BRITISH COLUMBIA.

R. C. Treherne, Entomologist in Charge for British Columbia, Dominion Department of Agriculture.

The products of entomological labors during the past year in British Columbia have been many and varied. In addition to my work as a Federal Officer under the Dominion Entomological Branch, I have undertaken the general direction of the Provincial Entomological work, pending the appointment of a Provincial officer. Under the Dominion Entomological Branch, Messrs. W. Downes and E. P. Venables are engaged, the former on a study of small fruit insects in the Coast sections and the latter on a study of tree fruit insects in the interior of the province. Mr. A. B. Baird is stationed at Agassiz, B.C., working under the general direction of Mr. J. D. Tothill, who has charge of the Federal Natural Control Investigations. His work has been mainly a study of the natural control agencies of the Tent Caterpillar, the Fall Webworm and the Spruce Bud-worm, and these studies begun by Mr. Tothill in 1917 have been continued by Mr. Baird in 1918 and 1919, at Victoria, Vancouver, Agassiz and Lillooet. Mr. Eric Hearle commenced a study of the mosquitoes in the Lower Fraser Valley of British Columbia in March 1919, acting conjointly under the authority of the Dominion Entomologist and under a studentship granted by the Honorary Advisory Council for Scientific and Industrial Research, and he will doubtless not only continue this work in the Lower Fraser Valley but extend it over the province at other important centres. Mr. Ralph Hopping was appointed under Dr. J. M. Swaine, Chief, Dominion Division of Forest Insects, in December, 1919, and he is stationed at Vernon, B.C., engaged on the studies relating to certain forest infesting insects, particularly some *Dendroctonus* beetles affecting commercial pine.

Under the Provincial Entomological Branch, I am fortunate in being associated with Messrs. M. H. Ruhman and E. R. Buckell. The former is engaged in a study of vegetable insects and has made the study of the Root Maggots of the onion and the cabbage his special work during the past two years. Mr. Buckell has taken in hand studies relating to cereal and range insects, the most pressing problem, at the present time, being the control and investigation of locusts on the range.

Vernon, at the north end of Okanagan Lake, has been selected as the headquarters for entomological work in the Province at the present time. Here the central office is located with a reference library and collection of insects for study available to members of the staff, and Riker Mounts and photographic displays of insect pests, in appropriate arrangements, of interest to farmers. Branch laboratories have been established at Victoria, Agassiz and Mission. Another movable laboratory was stationed at Penticton in 1919 but doubtless will be located in the Chilcotins in 1920.

During the past year, 1919, the following investigations have been conducted, excluding the reports of Messrs. Hearle and Baird, who will issue the results of their work independently.

The Peach Twig Borer, *Anarsia lineatella,* was studied at Penticton, making the second consecutive year in which this insect has received attention. We are satisfied that the early application of lime-sulphur, 1-9, as close to, but previous to, the blossoming period as possible, will achieve good commercial results. Applications of arsenate of lead may be made immediately after blossoming with equally good results. The two applications of spray may be made in cases of severe infestation. This insect is known to attack prunes, plums, peaches, apricots, and cherries, and where these fruits are seriously attacked the same procedure for control, as outlined above, may be followed.

Certain studies were undertaken at Vernon this year to breed to maturity the various "worms" affecting fruit. This work was carried out to determine with accuracy the species present in the fruit orchards and to differentiate between the larvæ of the various species for the purpose of assisting in diagnosing outbreaks of Codling Moth. The following species occur: *Tmetocera ocellana, Argyroploce consanguiniana, Cacoecia rosaceana, Mineola tricolorella,* and *Laspeyresia prunivora.*

Insect distributors of fire blight were also the subject of study. Many insects received attention in this connection and while some were incriminated as carriers of both summer and winter blight, it is not believed that their control will either eliminate the disease or control it to the extent expected by many growers.

The Strawberry Root Weevil, *Otiorhynchus ovatus,* is still being subjected to investigation, the main line of work being a demonstration in the principles of crop of rotation. A section of land has been engaged for a period of six years to put into practice the remedies for this weevil which we believe may be successfully held in control by cultural methods. Mr. W. Downes, assistant in charge of this work, has recently shown that the weevils are parthenogenetic and that certain overwintering females may oviposit in the early spring months.

The chief small-fruit insects, with the exception of the Strawberry Root Weevil, which is the most serious, are the following: *Bembecia marginata, Phorbia rubivora, Aristotelia fragariae, Synanthedon rutilans, Epochra canadensis,* and an *Empoasca* of the Loganberry. It is hoped that all these insects will be studied closely during the next few years. With *Epochra canadensis* we have been unable, thus far, to prove any value from the poisoned bait spray and are still recommending growers to rely on cultivation and the use of chickens to rid themselves of this pest.

Among the vegetable insects the Cabbage Root Maggot and the Onion Maggot were each the subject of considerable study. The bulk of the work against the Cabbage Root Maggot is recounted on another page of these proceedings. The work against the Onion Maggot has not resulted, as yet, in our being able to offer definite recommendations for control under field conditions as they pertain to the Okanagan Valley. Our efforts to test the value of the poisoned bait spray have not apparently been rewarded with success. Our inclinations lead us to believe that late thinning and the use of a spring trap crop have considerable value, and in this belief our growers are recommended, at present, to plant a few rows of cull onions, 3-4 inches deep in the soil, in the early spring months, allowing the onions to sprout and thus act as a trap crop for the first generation of the fly. The work with the poisoned bait spray, which is, according to report, giving very good results in Eastern Canada and in the Eastern United States, is being continued. Consequently it is hoped that our recommendations will assume a more definite state in a few years' time.

Among the insects affecting grain and range crops, the locusts situation received considerable attention during the past year. The main species involved were *Camnula pellucida, Melanoplus atlanis* and *M. femur-rubrum.* The paper in this number of the Proceedings by Mr. E. R. Buckell, on some ecological and life history notes of locusts, covers in part, the work accomplished.

Spraying investigations that are being carried on, at present, in the Province, are being maintained by the Provincial Horticultural Division. Their main investigations have been conducted against the Green Apple Aphis, in order to determine the cheapest spray to apply; and against Apple Scab where different mixtures, strengths, and formulae have been used in test against each other. The Codling Moth field work has also been in the hands of the Provincial Horticultural authorities, working in association with the officers of the Entomological Branch. Approximately 223 acres of apple orchards were handled under quarantine in the neighbourhood of Vernon during the past year. 107 acres of this 223 were infested with Codling Moth in the year previous, 116 acres were contiguous to the infested area and were treated as though infested. 11,422 apple trees in this acreage were banded and were sprayed three times, and at the end of the season 19,401 boxes of apples were individually examined for larvæ. Altogether 373 larvæ and pupae of the Codling Moth were taken at Vernon, and as Vernon, during 1919, was the only point in the Okanagan Valley where examples of this moth were taken, the control operations have succeeded to a very creditable degree. A few years ago three distinct and separate outbreaks of the moth occurred in the Okanagan Valley, with as many as 10,000 larvæ being taken in a single year. The record as it stands, therefore, is not only very encouraging but is an indication that incipient outbreaks, in small areas, with proper support by the growers, can be not only reduced but also eradicated. A small new outbreak of this pernicious pest occurred at North Bend this year, which will necessitate action this coming year.

The Tent Caterpillars, *Malacosoma pluvialis* and *M. erosa* were exceedingly common at Vancouver and Victoria in 1919. The outbreak at certain points being exceptionally severe. A memorandum outlining the method for control was submitted to the City Councils of the Cities of Vancouver and Victoria, but with this exception, these insects were studied exclusively by Mr. Baird.

Many sundry insect notes were collected during the course of the year and the more important minor records have been incorporated in a report to the Department of Agriculture, Victoria, B.C. A similar report for the year 1918 was submitted in the same way to the Provincial Department of Agriculture and was published in two sections in the official organ of the Department, the *Agricultural Journal*.

RESULTS OF SOME PRELIMINARY EXPERIMENTS WITH CHLOROPICRIN.

G. J. Spencer, O. A. College, Guelph.

In 1917, when meditating upon the effects of enemy gas that I had received at Passchendaele it occurred to me that British gas might be turned upon enemies other than Germans.

The opportunity to try this out came in the spring of 1919 when the Khaki University of Canada obtained permission for men of the Canadian forces to study at British Universities. I went to Victoria University, Manchester, where through the courtesy of Prof. S. J. Hickson, I was given the run of the research laboratory and the insectaries at Fallowfield. From the explosives department of the Ministry of Munitions I obtained samples of three of our common battle gases, one of them being chloropicrin, formula tri-chlor-nitrite.

It was decided to try the effects of these gases with a view to greenhouse, flour-mill and domestic fumigation. There was time to carry out only one experiment in Manchester before I was recalled to camp.

EXPERIMENT OF CHLOROPICRIN ON PLANTS IN A GREENHOUSE..

Capacity of greenhouse, 675 cubic feet approximately. Temperature in the house (June) 90° F. Ten cubic centimetres of gas were used in each of three petri dishes, two in opposite corners of the room on a table, and one on the floor. The nearest dish was right amongst the plants, which were: Recently potted dandelion in flower, Michaelmas daisy, wild vetch and curled dock, a geranium in a pot and cut boughs of willow. Insects present: Thrips, geometrid larvæ, leaf-rollers, Cercopidae, immature Jassidae and some Muscidae flying around the room.

A gas mask was used throughout the experiment in order to observe the action of the gas on the insects.

The leaf-hoppers were the first to show signs of distress by falling off the willow boughs six minutes after the gas was introduced. At the end of 10 minutes and 20 minutes respectively 10 cubic centimetres more of gas were poured out, this time on the floor making a total concentration of 50 c.c. After an exposure of 23 minutes the thrips were apparently all dead, although they had fallen out of the flowers after 11 minutes. At this time the Jassids and the immature Cercopids whose spittle masses had not been disturbed at all were also on the table moving feebly.

The experiment terminated in 38 minutes with the thrips, Jassids and Muscids all dead and the cercopids, the geometrid and leaf rollers very feebly moving. The doors and windows were opened and kept open until the house could be freely entered without discomfort, the gas being dispelled in 5 minutes. Next morning, i.e. after 17 hours those insects which had been feebly moving the day before were all dead. The cercopids alone, in untouched masses of spittle, were apparently unharmed. But all the plants were drooping badly, especially the vetch and michaelmas daisy, and at the same hour the second day, all the plants were dead.

In this experiment the temperature was very high and the relative humidity must have been high also as the floor of the house had been recently watered. But the volume of gas was very low, being for half the experiment only 30 c.c. and at the end of the experiment only 50 c.c. per 675 cubic feet, which amounts to only 3.7 oz. per 1,000 cubic feet.

With these results in mind, the following experiments were carried out at Guelph, the relative humidity being determined in each case:

1. Varying strengths of gas—other factors being equal.
2. Shorter or longer period of exposure.
3. Exposure by night and by day.
4. The killing power of the gas on various insects.

A good supply of Red Spider on salvia and of mealy bugs on coleus was available in the greenhouses of the College and as both these host plants show great susceptibility to killing by hydrocyanic gas, it was considered advisable to try the comparative value of chloropicrin on them.

Experiments were conducted at first in daylight, and proved that exposure to an atmosphere at the rate of 3 pounds of gas per 1,000 cubic feet, relative humidity 87, temperature 55.8° F. kill red spider effectively in 8 minutes—but kill salvia host plants in 5 minutes. And while 40 minutes exposure kills coleus and begonia, it does not kill all the mealy bug; those with their mouth-parts inserted in the stem of the plant seeming to survive those that were moving about. By next day young were issuing freely from the egg masses.

EFFECT OF GAS ON VARIOUS INSECTS.

The effect of the gas was tried also on leaf-hoppers and aphis on rose, red spider on salvia, tarnished plant bug and mites on aster and on cutworms. Temperature 66.2° F. Relative humidity 89. Concentration 3 lbs. per 1,000 cubic feet.

Result. Some leaf-hoppers died in 4 minutes, others in 14 minutes; red spiders and aphis seemed to be killed in 8 minutes. The aphis do not remove their beaks from the plant. On the insects being removed from the chamber at the end of 30 minutes, the capsids, cutworms and a few aphis that had been covered under a mass of leaves were still kicking feebly. After being exposed to the air for one hour everything was seen to be dead.

The action of choloropicrin on man is cumulative, and this would seem to be the case with insects also. In most instances, insects that may be kicking feebly when removed from the gas die after a while, even if placed in a current of fresh air.

Effect of rapid concentration. To determine if a sudden rush of gas would prove more effective even in reduced quantity, choloropicrin at the rate of 1½ pounds per 1,000 cubic feet was heated in a retort over a spirit lamp and the gas introduced into the chamber through rubber tubing. Mealy bug on begonia were the insects and plants used. Temperature 68° F. Relative humidity 82. The gas was practically volatilised in 14 minutes. When heating ceased and the plant was left in the chamber for two hours and then removed, on removal a few bugs showed signs of life but these died in three or four hours. Unfortunately the plant was withering at the time of removal.

Experiments at night. Finally, gas was used on red spider and mealy bug at night at a strength of 8.7 oz. per 1,000 cubic feet, temperature 59.0° F., relative humidity 99. Plants used salvia and coleus. Exposure lasted 90 minutes and by this time all red spider and mealy bug were dead; plants apparently normal. Next morning both species of plants were withering.

Inferences from foregoing experiments. It would seem that chloropicrin cannot be used for greenhouse fumigation as it has deadly effects on plants.

Penetration in earth. To test the penetration of the gas in earth, a flower pot about 7 inches deep, of ordinary greenhouse potting soil was used. Earth worms and millipedes were placed at different depths. (1) On the surface, (2) 1½ inches down, (3) 5 inches down. Experiments done at night, concentration at the rate of 8.7 oz. per 1,000 cubic feet. Time of exposure to gas 11 hours and 30 minutes. Temperature 55.4° F., relative humidity 88.

Result. Of those millipedes on the surface, some had crawled off the soil and some into it. Those at 1½ inches depth had gone deeper. At the end of the experiment all the millipedes and worms appeared dead, and while after 5½ hours the largest millipedes showed slight movement, the worms were all dried up. Eight hours afterwards another large millipede was bending slightly, but 12 hours after, all were dead without having moved from their original positions.

EFFECT OF CHLOROPICRIN ON HOUSE FURNISHINGS.

With a view to finding out if choloropicrin would have any effect on furnishings in houses, the following articles were exposed to its vapors for 12 hours: bright steel, copper, brass, silver, oatmeal wall paper with gilt splashings, several styles of lithographing in colors, cotton material, aluminum and varnished wood (as of cabinets). Relative humidity 88. Temperature 55.6° F.

Result. The gas has a tendency slightly to rust polished steel. Nothing else was affected. Exposure to the gas for 5 or 6 days, even at mild concentrations will rust steel badly. If however, the liquid itself should come into contact with cotton material, it will eat holes into it in a few days' time. Especially is this noticeable after the material has been washed. The gas has little or no action on rubber.

EFFECTS OF CHLOROPICRIN ON GRAIN, MEAL AND FLOUR PESTS.

Into cotton bags containing respectively 2,000 grams of pure wheat flour, and 1,000 grams of a mixture of flour and bran, the following insects were placed in a position about half-way through the contents of the bags: Saw toothed grain beetle (*Silvanus surinamensis*), Meal worm (*Tenebrio molitor*), Drug store beetle (*Sitodrepa panicea*), Confused flour beetle (*Tribolium confusum*), Cadelle larvæ (*Tenebroides mauritanicus*), Granary Weevil (*Calandra granaria*). Temperature 63.5° F. Relative humidity 88 to 84. Concentration 8.7 oz. per 1,000 cubic feet. Time of exposure 25 hours and 15 minutes.

Of these insects, the meal worm larvæ alone moved through the flour either up or down. In both materials, flour and the flour bran mixture, all the adult and larvæ were killed. But 58.3 per cent. of the drug store beetle pupae were still alive when their cases were opened.

EFFECT OF CHLOROPICRIN ON MEAL WORM MOTH LARVÆ (*Plodia interpunctella*).

A packet of Quaker Oats, very heavily infested with all stages of meal worm moth was exposed to concentration of 8.7 oz. per 1,000 cubic feet for 24 hours. Temperature 64° F. Relative humidity 86. All stages of the pest were killed.

OUR COMMON CERCOPIDAE.

GEO. A. MOORE, MONTREAL, QUE.

As no doubt some here are not familiar with the Cercopidae, or at least do not know these interesting insects by their scientific name, I will begin by telling you their common name and the interesting feature that is characteristic of the family. They are most commonly known as Spittle insects, a term given them because of the habit the nymphs or young have of making a spittle-like froth in which they live.

Many curious explanations have been made to account for this frothy substance seen upon grasses and plants, which is sometimes so thick as to cover and wet a person's boots or clothes when passing through a field or path. Superstitious fear is sometimes felt by the uneducated, who steer clear of it. Some attribute it to frogs, hence the common name "frog spittle" is given, likewise "snake spit" is used in other localities. Negroes of the South claim that horseflies are produced from such masses.

So much now for this peculiar substance, let us now get to know the insect that produces it and afterwards we can learn why it is made and how.

The Cercopidae are a family in the sub-order Homoptera of the great order Hemiptera.

The Hemiptera includes the true bugs: cicadas, treehoppers, spittle insects, lantern flies, plant lice, and scale insects; the sub-order Homoptera all the above except the true bugs.

The Homoptera can be readily divided into two groups; (1) those in which the beak clearly arises from the head and (2) those in which the beak arises apparently from between the front legs or is absent.

Our Cercopidae belong to the first group and have associated with them:

The Cicadidæ —cicadas.
The Flugoridæ—lantern flies, etc.
The Membracidæ —tree-hoppers.
The Cicadelliaæ —leaf-hoppers.

Funkhouser has given their phylogenetic rank, beginning with the lowest, as follows:

1. Cicadidæ.
2. Membracidæ.
3. Jassidæ.
5. Fulgoridœ.
5. Cercopidæ.

The Cercopidae differ from the Jassidae by having only one or two teeth instead of a row of spines on their hind tibiae. They differ from the Membracidae by not having their prothorax prolonged into a horn or point above the abdomen. They differ from the Fulgoridae by having the antennæ inserted in front of and between the eyes instead of being inserted on the sides of the cheeks beneath the eyes.

According to Uhler the Cercopidae have characteristics which mark an important advance in the direction of the higher sub-order Heteroptera. Let us itemize the important features which lead to this decision.

1. The large size of the pronotum or prothorax is in contrast to the small one in the Fulgoridae and is not a phantastic ornament like that in the Membracidae. According to Uhler it is an important regional portion, exercising various important functions.

2. The increased freedom of the anterior coxae thereby approaching a walking insect.

3. The terminal portion of the wing covers being membranous and transparent suggesting the Heteroptera.

4. The hind tibiae having only one or two short stout spines.

In some respects therefore the Cercopidae represent the highest and most specialized forms of the Homoptera, and although most students consider the Fulgoridae to be the highest and most specialized there is evidence in favor of the Cercopidae occupying the position.

So much then for their rank. They are members of a sub-order approaching the higher sub-order and exhibiting interesting links between the two.

I have not yet observed the eggs and have read but few details of what they are like. They are slightly curved and cylindrical and are said to be deposited in the stems of grasses, plants and twigs.

The Cercopidae like other Hemiptera develop gradually, undergoing a series of moults and the young exhibit the characteristics of the adult, becoming more like it at each moult or instar, of which there are five.

They most likely hibernate here both in the adult stage and in the egg.

I have taken adults on May 24th of *Lepyronia quadrangularis*, and on June 20th *Philaenus spumarius*.

It is in the nymphal stage that they live within the frothy mass mentioned above. This substance is manufactured by the newly hatched nymph and they live within it until they emerge as adults. It was formerly supposed that this was made by thrashing about of the oval end of the body in a clear viscid fluid exuded from the posterior end of the body. Prof. E. S. Morse has, however, carefully observed the operation and states that the bubbles are made as follows: the insect exudes a clear viscid fluid from the posterior end of the abdomen, after a short time the posterior end of the abdomen is extended out of the fluid and as it were, grasps a quantity of air and then it is pulled down into the fluid and the air released, making a bubble. This is continued at the rate of seventy or eighty times a minute. The tail is moved alternately to and fro so that the bubbles are distributed around its body.

Now what is the exudate for? According to most students it is a protective covering which, even if it is conspicuous, apparently serves the creature well. It is said that wasps know that in this juicy covering there is a goodly meal for their young and that they dive in and take the unfortunate nymph to its nest to feed its offspring. However, it would appear that it protects the young Cercopid well, both from the sun and from the ravages of spiders, birds, etc.

Dr. Ball has given some interesting facts upon Cercopidae living in arid regions where many of them do not make spittle masses. He records an interesting case where the nymphs were living in a gall-like sheath in a plant enlarged enough to harbour many of them, and all living in spittle. This was in the Cow Parsnip (*Heracleum lanatum*). In these arid districts others lived on the roots and crowns of Compositae and legumes where they were protected from the hot sun and dry air.

Lintner suggests that the covering is necessary to cover the delicate-skinned nymph from the burning heat of the sun.

The Cercopidae found in Canada are as follows:

Family CERCOPIDÆ (Leach)
SUBFAMILY CERCOPINÆ (Am. and Serv.)
No species.
SUBFAMILY APHROPHORINÆ (Am. and Serv.)
Genus Aphrophora Germ.

1546. *A. quadrinotata* Say. Quebec, Ontario.
1548. *A. parallela* Say. Nova Scotia, Quebec, Ontario.
1549. *A. irrorata* Ball. British Columbia.
1551. *A. saratogensis* Fh. Nova Scotia, Ontario.
1553. *A. signoreti* Fh. Ontario.

Genus *Lepyronia* Am. and Serv.

1555. *L. quadrangularis* Say. Nova Scotia, Quebec, Ontario, Manitoba.

Genus *Philaronia*.

1558. *P. abjecta* Uhl. Manitoba.
1559. *P. bilineata* Say. Quebec, Ontario, N. W. Canada.

Genus *Philænus*.

1560. *P. leucophthalmus* Linn. Quebec, Ontario, Manitoba.
    (a) Var. *falleni* V. D.
    (b) Var. *ustulatus* Fall.
    (c) Var. *lateralis* Linn.
    (d) Var. *leucocephalus* Linn.
    (e) Var. *marginellus* Fabr.
    (f) Var. *fasciatus* Fabr.
    (g) Var. *fabricii* Van D.
    (h) Var. *pallidus* Zett.
1561. *P. lineatus* Linn. Nova Scotia, Quebec, Ontario.

Genus *Clastoptera* Germ.

1562. *C. obtusa* Say. Quebec, Ontario.
  (a) Var. *achatina* Germ.
  (b) Var. *testacea* Fh.
  (c) Var. *tristis* V. D.
1566. *C. proteus* Fh. Quebec, Ontario.
  (a) Var. *proteus* Fh.
  (b) Var. *vittata* Ball.
  (c) Var. *pini* Fh.

The commonest Cercopid in the Province of Quebec is *Philaenus leucophthalmus* Linn. with its hosts of varieties. This insect is found swarming in meadows and Osborn has called it the meadow Froghopper. It feeds upon the common flowers, such as the buttercup, yarrow, thistle, daisy, clover, and particularly the golden-rod.

The egg is moderately elongated, irregularly elliptic, about three times as long as broad, narrowing to one end, slightly flattened. One side straight or slightly incurved, the outer convexly curved, giving the egg a slightly curved appearance. The shell is tough and hard and developed while the eggs are still in the ovariole ducts.

They are deposited in the stalks of their food plants and pass the winter there.

The young hatch out early in the summer, during June, and after passing through five stages emerge as adults throughout July and part of August.

The nymphs are somewhat like the adults even in the earliest stages and gradually become more like it. The fifth instar is to all intents and purposes a pupal stage and in their later stages show colour and have large wing-pads.

As already mentioned this species is extremely variable, running from plain yellow to black and having varied patterns. According to Fallemand in *Genera Insectorum,* there are at least seventeen well-marked varieties, and Van Duzee lists eight as occuring in America, north of Mexico. I have at least six distinct varieties, but there are many others and the intergrading makes it difficult to separate them. Different varieties mate together and it would be interesting to breed them and see what a brood would bring forth.

The second commonest Cercopid is *Philaenus lineatus* Linn., or the Lined Spittle Hopper, or as Osborn calls it, the Grassfeeding Froghopper. This insect belongs to the same genus as does the first mentioned and has a similar life history, but feeds upon grass, timothy and red-top. This is a European species introduced into Canada. It is remarkable in that the former species is very variable, this one is constant in its form and coloring. The male is a little smaller than the female.

Aphrophora quadrinotata Say, or the Four-spotted Spittle Insect, is also common and is often found upon grape vines. They are usually taken in the adult stage during the months of July and August.

Aphrophora parallela Say, or the Parallel Spittle Insect is found quite commonly on pine trees. In reality we should designate it the Pine Froghopper as this tree is its home. There is lives in company with *A. saratogensis* Fh. It does not show the same degree of variation as does *P. leucopthalmus,* but it varies from dark to light forms.

Lepyronia quadrangularis Say, or the Angulated Froghopper is more angular in form than the others and is fairly common. It is said to feed upon grasses, weeds and the blackberry. Little variation is seen in it.

The Genus Clastoptera has two species and they are variable.

The first is *C. obtusa* Germa, or the Alder Spittle insect. This has four varieties and is common. It feeds upon the Alder.

C. proteus has three varieties. It feeds upon the dogwood, cranberry and blueberry.

They are called hoppers because of their remarkable jumping habits. They are generally found on the boughs of trees or standing on the stalks of flowers, especially the golden rod. They are very shy and when approached they slide around to the other side and they keep out of sight.

MY EXPERIENCE THIS YEAR IN DUSTING AND SPRAYING (1919).

Father Leopold, O.C.R., Oka, Que.

Your kind President, Mr. Caesar, insisted that I give you a paper this year, and I thought it would interest you to know of our work at the Oka Agricultural Institute in dusting and spraying during the past season.

The Orchard. The following remarks are limited to one of our orchards only, the most uniform we have to carry on a commercial experience in dusting and spraying: Our Wealthy orchard, situated on a gentle slope with a south-west exposure. It is not the best exposure for our Province, but we seem to get good results with this particular orchard.

I chose 30 rows of this orchard, as you can ascertain in looking over Table I, so as to have a complete row of 11 trees separating each plot which number 6 in all, three plots sprayed and three plots dusted. Remember that the 6 plots are all in the same orchard, on the same site, the trees all the same age, 30 years old, and all the operations made on the same day. We could not get more uniform conditions, considering also that the bloom on each plot was quite uniform.

Bloom. Looking over Table I, we may see that in plot I, 4 trees only out of 44, did not bloom and 23 were in full bloom; in plot II, 10 trees did not bloom and 18 were in full bloom; in plot III, 11 did not bloom and 16 were in full bloom; in plot IV, 11 also did not bloom and 11 were in full bloom, while 18 had half to three quarter of a full bloom; in plot V, only one tree did not bloom, while 21 were in full bloom; in plot VI, 4 only did not bloom and though three only were in full bloom, 15 had from one half to three quarters of a full bloom.

Object of Experience. I insist somewhat on the fact that the greatest part of each plot had trees in bloom, as the first object I had in view, was to determine the action of liquid Lime-Sulphur on the apples in comparison with the action of liquid Bordeaux mixture on the same. I did not care what were the results as far as scab is considered, Wealthy apples not being very subject to scab.

The second object I was after was to determine just what the cost was in comparison of the dusted plots, per tree, with the sprayed plots. I have carefully gone over this in Table VIII.

I did not intend to tabulate the results of each plot separately in picking and classifying the crop, as this would have entailed too much work, for a commercial experiment. But, by going over the entire orchard, plot by plot, we had a very good idea of the results per plot.

Dusted Plots. Plots II (Table III), IV (Table V), and VI (Table VII), were dusted, with the exception of the first semi-dormant liquid spray on all except the VI's plot.

Taking up Table III we see that we used sulphur, talc and arsenate of lead in this plot, while in Table VII we see that in the last plot we substituted Hydrated Lime to the talc and arsenate of lime to the arsenate of lead and with every sort of satisfaction, thus making the last formula the most economical of all the dusted plots, as arsenate of lead is dearer than arsenate of lime.

Another interesting point was the use, for the first time in our orchards, of anhydrous Bordeaux mixture or dust Bordeaux. The arsenate of lime was used with perfect safety with this bordeaux dust. Having found the commercial copper dust too strong we reduced it by adding more hydrated lime, thus using the following formula, (Table V):

Dry Bordeaux as bought mixed already	46¼ lbs.
Hydrated Lime added to above	46¼ lbs.
Arsenate of Lime	7½ lbs.

Looking over the table of comparative costs, we can see that this new dusting material costs a little over 34½ cents per tree for the four applications, as against 33¾ cents for Sulphur-Talc-Arsenate of Lead Dusting and 17½ cents for the Sulphur-Hydrated Lime-Arsenate of Lime Dusting material

As to results on the crop, the copper dust seems to have good fungicidal value, perhaps a little better than the sulphur dusts, without any russeting to the fruit.

Sprayed Plots. I come now to the first object in view: to determine if Bordeaux mixture, as employed here in our orchards, is a superior spray than the Lime-Sulphur wash we have used since the past 10 years. In a word what the advocates of Bordeaux maintain is that Lime-Sulphur wash, far from being a beneficial spray, sprays the apples of the tree. This has not proven true at all in our orchards. In fact after we were sure that the apples in the plot sprayed with sulphur were sticking just as heavily on each tree, we had to thin each tree in plot III as in any other of the sprayed or dusted plots.

A good many visitors came to see the orchard this summer, and I may mention especially Mr. Petch, Mr. Davis and Mr. Bunting of Macdonald College. These gentlemen went over the orchard very carefully, and were convinced of the fact that Lime-Sulphur is surely a safe spray for our Province at least.

No russeting to speak of was noticed on either of the two Bordeaux mixture plots, plot I and plot V, though more Copper Sulphate was used on plot 1 than on plot V, the old formula of 4-4-40 being maintained on plot 1 and the new one of 2-10-40 on the other.

Results. Time is lacking to give too many details, but as I have mentioned before, we did not tabulate results, plot per plot, but after looking over the whole orchard, we have found that any of the formulas employed gave satisfactory results, both as to quantity and quality of the fruit. The 6 plots gave 1,500 boxes of fine apples, after they had been all thinned.

In looking over the last table of costs, dusting is certainly a more expensive way of treating an orchard than spraying; but I am going to stick to both, as both have their utility, dusting is a much quicker way to get around the trees in bad weather, and some times no-results can be obtained if the applications are not made on time and thoroughly.

TABLE I.

Showing a Comparison of the Bloom in the Six Different Plots.

I.		II.		III.		IV.		V.		VI.	
1 2 3 4	5	6 7 8 9	10	11 12 13 14	15	16 17 18 19	20	21 22 23 24	25	26 27 28 29	30
¼ o o ¾		¾ o x o		o o o o		o o o ¼		x ½ ¼ x		¾ ¼ ¼ ¼	
¼ ½ ¼ ¼		x o ¼ ¾		o o o o		¼ o o ¼		x ¼ ½ ½		¼ ¼ ¼ ¼	
¼ x ½ x		¼ ¼ o o		x ½ ¼ ¼		¼ ½ ½ o		¾ ¾ x x		¼ ¼ ¼ ¼	
¾ ¼ ½ ¾		¾ ¾ x x		½ x ¼ o		o x ¾ ¾		x x x ¾		¼ ¾ ¼ ¼	
x x ¼ x		x ½ x ¾		x o ½ ¼		¾ o x ¾		¾ ¾ ¾ ¾		o ½ ¾ o	
x x x x		o x o x		x o ¼ x		x x x x		x o x x		x ¾ ¼ ¼	
x ¼ x x		¾ o x o		x x ¼ ¾		x o o ¾		x x x o		¾ ¾ ¼ o	
x x x x		¾ o x o		x ¾ x x		¾ x o x		x x ¾ x		¾ ¾ o ¼	
x x ¾ x		x x ¼ ¾		¾ ¾ x x		¾ ¾ x ¾		¾ x ¾ ¾		¾ ¾ ¼ ¼	
x x x x		x ¾ x x		x x ½ x		x ¾ ¾ ¾		¾ x x ½		x ¾ ½ x	
o ¾ o x		¾ x x x		x ¼ ¾ x		¾ ¾ ¾ ¾		¾ x ½ ¾		¾ x ¾ ¼	

Explanation of signs: o, no bloom at all; x, full bloom and the fractions mean one-fourth, one-half and three-fourths of a full bloom respectively.

Each plot contains four complete rows of trees, rows 5, 10, 15, 20, 25 and 30 separating each plot.

TABLE II.

Plot II: 39 Trees—Bordeaux Mixture, 4-4-40.

Date.	Time of Applications.	Temperature.	Material.	Quantity.	Cost Material.	Cost of Labor.	Time.
May 13.	Buds quite open	Fine	Bord. mix. 4–4–40	90 gls.	$0.92¼	0.37½	30
May 26.	Buds showing pink	Fine	Bord. mix. 4–4–40	80 gls.	0.82	0.31¼	25
June 4.	After blossoms have fallen	Rain, night of 5 to 6, 6 to 7 and 7 to 8. Cloudy	Soluble sulphur, 1 lb. to ½ lb. Ars. Lime, Hyd. Lime, 5 lbs,	95 gls.	0.80¾	0.50	40
June 16.	Apples well formed	Fine	Same as above.	90 gls.	0.76½	0.37½	30

TABLE III.

Dusted Plot: Sulphur, Talc, Arsenate of Lead in Powder Form—34 Trees.

Date.	Time of Application.	Temperature.	Material.	Quantity.	Cost of Material.	Cost of Labor.	Time taken.
May 15 .	Rain from night of 16 to 18 at night	Leaf buds well open	L.-S. 1.008 semi-dormant	90 gls.	0.59½	0.31¼	25 min.
May 26 .	Buds showing pink	Fine	Sulphur-Talc 60–40	80 lbs.	2.04	0.18¾	15 min.
June 4 ..	After blossoms have fallen	Rainy, nights of 5 to 7. Cloudy, 7 and 8	Sulphur of Talc. Arsenate of lead, 40–50–10	70 lbs.	3.62½	0.18¾	15 min.
June 17 .	Apples well formed	Fine	Same as above	80 lbs.	4.36	0.18¾	15 min.

N.B.—We put on a semi-dormant spray of lime-sulphur wash on the 15th of May.

TABLE IV.

Sprayed Plot: 32 Trees—Lime-Sulphur-Arsenate of Lead (Powder).

Date.	Time of Application.	Temperature.	Material.	Quantity.	Cost of Material.	Cost of Labor.	Time taken.
May 16 .	Leaf buds well open	Rain from night of 16 to 18 at night	L.-S. 1.008 semi-dormant	80 gls.	0.53	0.37½	30 min.
May 26 .	Buds showing pink	Fine	L.-Sulphur, 1.007	70 gls.	0.37½	0.25	20 min.
June 4 .	Blossom having fallen	Rainy, nights of 5 to 7. Cloudy, 7 and 8	L.-Sulphur 1.007. Arsenate of lead, 1 lb. in 40	70 gls.	0.97	0.18¾	15 min.
June 16 .	Apples well formed	Fine	L.-S. 1.006, ½ lb. ars. of lead	80 gls.	0.42	0.25	20 min.

TABLE V.

DUSTED PLOT: ANHYDROUS BORDEAUX AND DRY ARSENATE OF CALCIUM.

Date.	Time of Application.	Temperature.	Material.	Quantity.	Cost of Material.	Cost of Labor.	Time taken.
May 16 .	Leaf buds well open	Rain from night of 16 to 18 at night	L.-S. 1.008	80 lbs.	0.53	0.37½	30 min.
May 26 .	Buds showing pink	Fine	Bordeaux dust, at 2½% metallic copper	80 lbs.	3.20	0.31¼	25 min.
June 4 .	Blossoms having fallen	Rainy nights of 5 to 7. Cloudy, 7 and 8	Dry Bordeaux, 46¼ lbs. Hydrated Lime, 46¼ Ars. Lime, 7½ lbs.	70 lbs.	3.15	0.31	25 min.
June 17 .	Apples well formed	Fine	Same formula as on June 4th	65 lbs.	2.92½	0.25	20 min.

TABLE VI.

SPRAYED PLOT: BORDEAUX MIXTURE 2-10-40 AND SOLUBLE SULPHUR—41 TREES.

Date.	Time of Application.	Weather.	Material.	Quantity.	Cost of Material.	Cost of Labor.	Time taken.
May 16 .	Leaf buds well open	Rain from nights of 16 to 18	Lime-Sul. semi-dorm., 1.008	90 gls.	0.59½	0.43¼	35 min.
May 28 .	Buds showing pink	Fine	B. mixture, 2–10–40. 2 lbs. $CuSo_4$	80 gls.	0.53	0.31¾	25 min.
June 4 .	Blossoms having fallen	Rain nights of 5 to 7. Cloudy, on 7 and 8	1 lb. solution sulphur; ½ lb. ars. of lime to 40 gls.; 5 lbs. H.L.	90 gls.	0.48	0.27½	20 min
June 16 .	Apples well formed	Fine	Same as above, ex. 1 lb. ars. lime	75 gls.	1.01¾	0.27½	20 min.

Do not use arsenate of lead with soluble sulphur. Be sure to add the hydrated lime (H.L.) to the soluble sulphur ars. of lime combination.

TABLE VII.

Dusted Plot: Sulphur, Hydrated Lime, Arsenate of Lime—38 Trees.
There is no semi-dormant spray in this plot. The Oka formula for dusting.

Date.	Time of Application.	Weather.	Material.	Quantity.	Cost of Material.	Cost of Labor.	Time needed.
May 26 .	Buds showing pink	Fine	Sulphur and Hydrated Lime, 60–40	80 lbs.	2.08	0.25	20 min.
June 4 .	Blossoms having fallen	Rain, nights of 5 to 6. Cloudy, 7 to 8	15 lbs. Sulphur, 5 lbs. Ars. Lime, 80 lbs. Hyd. Lime	75 lbs.	1.90¼	0.25	20 min.
June 17 .	Apples well formed	Fine	Same formula as on 4th of June	80 lbs.	2.02½	0.18¼	15 min.

We have found the above dusting formulas, omitting the semi-dormant spray in Quebec, to be the most economical dusting sprays.

TABLE VIII.

A Comparison of the Cost of the Dusted and Sprayed Plots.

Plot.	Material.	Labor.	Total Number.	Trees.	Cost per Tree.
I.	$ 3.31¾	$1.56¾	$ 4.87¾	39	$0.12½
II.	10.61	0.87½	11.48½	34	0.3378
III.	2.29½	0.06¼	3.35¾	32	0.1049
IV.	9.80½	1.25	11.05½	32	0.3454
V.	2.62¼	1.30½	3.92¾	41	0.0957
VI.	6.00¾	0.68¾	6.69½	38	0.1762

INSECT OUTBREAKS AND THEIR CAUSES.

JOHN D. TOTHILL, FREDERICTON, N.B.

The Standard Dictionary defines an outbreak as "a sudden and violent breaking forth as of something that has been pent up or restrained." This definition seems peculiarly apt for describing the biological meaning of the word because it implies that all nature is in a condition of restraint and that an outbreak is something abnormal due to the breaking of one or more restraining bonds.

Outbreaks are not confined to species of the insect world and neither are they confined to the animal kingdom. In the vegetable kingdom for instance, there are the familiar cases of the Russian thistle in Western Canada and the California Prickly Pear in Australia. There is also in our own country the case of the Northern Scrub Pine that so often comes up in pure stands after a fire has swept away the original soft wood forest. In the animal kingdom we have among insects such familar cases as the European Gipsy Moth in the New England States, the Forest Tent Caterpillars that greased the tracks and stopped some trains in Canada in 1914; the Army-Worms that at times have spoiled the Western wheat crop; and periodical outbreaks of short-horned grasshoppers. Examples of outbreaks of various species of vertebrates are also quite plentiful; there is the historical case of the European Cotton-tail Rabbit in Australia and there is the present case of the little prairie dog in Alberta. Even man himself has been known to be in a condition of biological outbreak; Caucasian Man in the 17th and 18th centuries doubled his population every twenty-five years on the North American Continent. So that outbreaks of general occurrence may be met with almost anywhere in the realm of living things.

To what causes are these outbreaks due?

As each species is held in equilibrium by the pressures of its environment it is obvious that an outbreak is due to a relaxing of one or more of these pressures.

Let us examine the cases of a few insect outbreaks the causes of which have been studied.

During the first twenty-five years of the Oyster Shell Scale's regime on this continent it increased so abundantly that men like Fitch held fears for the development of an apple industry. With the passage of the time, however, the menace of this scale insect has subsided. In the light of studies made on the present environmental conditions of this insect in Canada it seems probable that the early outbreak was due to an absence of its most effective enemy, a predaceous mite.

Turning to the Gipsy Moth I think we are more or less agreed that the New England outbreak was due more especially to an absence of natural enemies, such as the handsome Calosoma of Europe and the efficient little two-winged fly Compsilura; and also perhaps to a partial release of the food pressure.

In some of our Maritime Province cities there was last year an outbreak of the White-Marked Tussock. Mr. Dustan, who was detailed to make a study of these outbreaks, found that they were due largely to an abundant food supply; to an absence in cities of chickadees and the larger species of woodland ants; and to a relative scarcity of parasitic insects.

There is, at the present time, an outbreak of the Forest Tent insect in Alberta. Studies by Mr. Baird and myself have shown that the outbreak is due at least partially to an almost total absence of its usual insect parasites. It is also influenced perhaps by a relaxing of the food pressure or, in other words, to an increased proportion of trembling poplar.

In New Brunswick our last outbreak of the Forest Tent insect subsided suddenly in 1915. The outbreak seems to have been due to an over abundance of the poplar supply, as a direct result of civilization and forest fires.

In the case of the Spruce Budworm a study of the New Brunswick outbreak has shown the fundamental cause to be a relaxing of the normal food pressure in the form of an increased supply of balsam fir, which is the favored food plant.

This relaxing of the food pressure has been brought about by the hand of man and has been an inevitable result of existing lumbering practices.

Without going into details it can be said that the increase of balsam fir has not only meant an increased food supply, but has also meant a decreased bird supply. For the birds that under conditions of the primeval mixed type of growth keep this insect properly subdued, seldom nest or feed in pure stands of balsam fir.

In New Brunswick we now have an incipient outbreak of the Fall Webworm, and as our studies on this insect have been carried through the best part of a decade, it may be of interest to examine this case a little more closely than the others. In order to show the causes of the present outbreak let us glance for a moment at the situation obtaining toward the end of the last outbreak, and then let us follow the situation through a short term of years until the insect became almost extinct in the Province, and finally let us glance at the conditions of the present incipient outbreak.

In 1912 the Fall Webworm was abundant in New Brunswick and from the fact that the environmental pressures were then in a very nice state of equilibrium I infer that the insect had been a fairly conspicuous member of the fauna for at least a decade.

The food pressure was not very great because the staple diet is Alder and there is an abundance of this shrub along our streams and waterways; the food supply is not great enough to produce menacing millions of the insects but it is sufficient for their maintenance in a condition of mild outbreak.

On the basis of an average egg mass of 260 eggs, there were about 26 that for some reason or other failed to hatch. Of the 234 that did hatch about 42 were attacked in the young caterpillar stage by a four-winged parasite called *Apanteles*. Of the 192 left to tell the tale about 6 were attacked by another little four-winged fly *Meteorus*. Then as the larvæ grew in stature about 22 of those surviving fell prey to a fair-sized Ichneumon that is now known as a *Campoplex*. In spite of these attacks by insect parasites there were still left about 164 half-grown caterpillars. Of these about 85 were parasitized and so removed from the contest by another species of *Campoplex*. The 79 remaining larvæ became about three parts grown when a two-winged fly *Varichaeta* began an attack upon them. This fly victimised about 45 and this attack together with that of another species of minor importance reduced the inmates of our average nest to about 32. About this time the young red-eyed vireos were getting very hungry and the webworm caterpillars fell a prey to them. Of the 32 remaining these birds devoured over 90 per cent. leaving only about two in each nest. The few not attacked by birds were able to pupate, but some of them fell victims to pupal parasites of which an *Exochilum* was the most effective.

As a result of the combined environmental pressures the average number of moths yielded by each egg mass was less than two, so that in the following year there was a measurable decrease in the numbers of the webworm.

This decrease continued very regularly year after year until 1916 when the insect became almost extinct in the Province.

It is interesting to note in passing that as the species became less and less abundant the environmental pressures became so great that it was threatened with extinction. It may also be noted that as the species became rare so did its parasites until finally the red-eyed Vireos were averaging a spoil of 198 caterpillars from each web.

When the Webworm had practically disappeared from the entire Province, as represented by nine observation points, something happened that changed the whole situation. A flight of moths was blown across the Bay of Fundy and the coastal belt from St. John to Moncton was heavily seeded with the insects.

This condition enabled the species to do battle once more on favorable terms with the Vireos, and it began to increase and spread out again over the Province. It has now spread out over more than half the Province and is gaining ground rapidly.

The gain in numbers is also greatly favored because the parasites died out as the host became rare and they have not yet returned to the feast. Moreover they are not likely to return until our present outbreak becomes linked up with territory in which they now occur.

In a word then the causes of our present outbreak are, first an elimination of parasites from New Brunswick, then a flight of moths from new territory.

Having now considered a few insect outbreaks and their causes it may be remarked by way of conclusion that civilization is directly responsible for many of our more notorious outbreaks. We are increasing the food supply of particular insects and thereby making conditions favorable for outbreaks. This is not only true for the insects attacking agricultural crops but is also true for some of our forest insects. In New Brunswick we now have many square miles of forest lands supporting pure stands of poplar and these areas are the nursing grounds of our all too numerous forest tent caterpillar outbreaks. The pure stands of poplar have come in after the fires of civilization have swept away the ancient mixed growth. We also have many square miles of forest now composed of pure stands of balsam fir. In these stands has been nursed the present outbreak of Spruce Budworm—an outbreak that has swept away about three-fourths of the entire crop of merchantable fir in the Province. The overproduction of fir, as already pointed out, is a direct and necessary result of the existing methods of lumbering. In the cases of the Forest Tent insect and the Spruce Budworm civilization has had the effect of removing one of the most powerful of the restraining bonds, namely, that which under natural conditions constitutes a food pressure.

FURTHER NOTES ON THE CONTROL OF PEAR PSYLLA.

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With a view of securing some definite data on the susceptibility to common contact insecticides of pear psylla eggs at different stages of incubation, and in order to ascertain what spray material is the most effective ovicide, the following preliminary experiments were conducted this past year (1919).

Experiments Under Greenhouse Conditions.

During the latter part of the winter adult psyllas were taken from their hibernating quarters in the orchards and were brought into the greenhouse. There they were placed on small pear trees—French seedlings—grown in flower pots and were then confined by means of lantern globes. The insects mated readily and deposited their eggs on the seedlings. Large numbers of eggs of known age were in this way readily secured.

PERIOD OF INCUBATION. The duration of incubation of the egg was obtained from the "check" experiments, which will be referred to later, and was found to vary to no considerable extent under the fairly uniform greenhouse temperatures. In fourteen out of sixteen experiments it varied from nine to eleven days. The exceptional periods of incubation were respectively eight days and twelve days.

EXPERIMENTS WITH CONTACT INSECTICIDES.

Batches of eggs, at different stages of development from newly-laid to those on the point of hatching, were sprayed by means of an atomizer with four different dilutions of lime-sulphur wash; soluble sulphur and hydrated lime; lime-sulphur and starch; and lime-sulphur and Black Leaf 40. The results were as follows:

LIME-SULPHUR WASH.

TABLE I—EFFECT OF LIME-SULPHUR, 1-10, 1.027 SP. GR. ON PSYLLA EGGS.

No. of Tests made.	Total No. of Eggs.	Stage of Incubation when eggs were treated.	Average per cent. killed.	Actual per cent. killed.
2	557	Newly laid	64	70.0
2	470	4 days old	74	67.2
3	466	8 ,, ,,	67	68.8
1	414	*9 ,, ,,	74	73.4
Total.. 8	1,907			

TABLE II—EFFECT OF LIME-SULPHUR, 1-9, 1.029, SP. GR. ON PSYLLA EGGS.

No. of Tests made.	Total No. of Eggs.	Stage of Incubation when eggs were treated.	Average per cent. killed.	Actual per cent. killed.
6	843	Newly laid	89	91.3
8	730	4 days old	79	78.6
6	744	8 ,, ,,	77	75.5
2	282	*9 ,, ,,	43	32.3
Total.. 22	2,599			

TABLE III—EFFECT OF LIME-SULPHUR, 1-8, 1.032 SP. GR. ON PSYLLA EGGS.

No. of Tests made.	Total No. of Eggs.	Stage of Incubation when eggs were treated.	Average per cent. killed.	Actual per cent. killed.
10	679	Newly laid	99	99.7
9	593	4 days old	95	99.1
6	609	8 ,, ,,	99	99.3
5	848	9-10 ,, ,,	93	92.1
Total.. 30	2,729			

TABLE IV—EFFECT OF LIME-SULPHUR, 1-7, 1.037 SP. GR. ON PSYLLA EGGS.

No. of tests made.	Total No. of Eggs.	Stage of Incubation when eggs were treated.	Average per cent. killed.	Actual per cent. killed.
2	636	8 days old	100	100
2	635	*9–10 ,, ,,	100	100
Total.. 4	1,271			

* On the Point of Hatching.

As shown in the foregoing tables, lime-sulphur is most effective as an ovicide when used at the strength of 1-7. The tables also show that the newly-laid eggs are on the whole more readily destroyed than those on the point of hatching.

In the experiments with lime-sulphur 1-8 and 1-9 it was observed that frequently a large percentage of the eggs would hatch. However, the spraying mixtures apparently had weakened the embryos or nymphs within the eggs to such an extent that in emerging or immediately after emerging they succumbed.

In the tests where lime-sulphur 1-7 was used 100 per cent. of the eggs invariably collapsed.

LIME-SULPHUR AND STARCH.

An effort to increase the ovicidal value of the weaker lime-sulphur sprays by adding starch to them in order to make them spread and stick better met with success. (See Tables Nos. 5, 6, 7.)

TABLE V—EFFECT OF LIME-SULPHUR 1-10 PLUS 2 LBS. STARCH TO 40 GALS. ON PSYLLA EGGS.

No. of Tests. made.	Total No. of Eggs.	Stage of Incubation when eggs were treated.	Average per cent. killed.	Actual per cent. killed.
*1	364	Newly laid	100	100
2	392	4 days old	100	100
2	577	8 ,, ,,	100	100
2	438	9–10 ,, ,,	100	100
Total.. 7	1,771			

TABLE VI—EFFECT OF LIME-SULPHUR 1-9 PLUS 2 LBS. STARCH TO 40 GALS. ON PSYLLA EGGS.

No. of Tests made.	Total No. of Eggs.	Stage of Incubation when eggs were treated.	Average per cent. killed.	Actual per cent. killed.
4	588	Newly laid	100	100
*4	471	4 days old	100	100
2	251	8 ,, ,,	100	100
4	581	9–10 ,, ,,	100	100
Total.. 14	1,891			

TABLE VII—EFFECT OF LIME-SULPHUR 1-8 PLUS 2 LBS. STARCH TO 40 GALS. ON PSYLLA EGGS.

No. of Tests made.	Total No. of Eggs.	Stage of Incubation when eggs were treated.	Average per cent. killed.	Actual per cent. killed.
5	615	8 days old	99	99.6
*5	867	9-10 ,, ,,	100	100
Total.. 10	1,482			

* In some of the tests a small percentage of eggs hatched, but the nymphs, in the process of emerging or just after emerging, succumbed.

LIME-SULPHUR AND BLACK LEAF 40.

A combination of lime-sulphur 1-9 and Black Leaf 40 also proved 100 per cent. effective.

TABLE VIII—EFFECT OF LIME-SULPHUR 1-9 PLUS BLACK LEAF 40, ⅜ PT. TO 40 GALS. ON PSYLLA EGGS.

No. of Tests made.	Total No. of Eggs.	Stage of Incubation when eggs were treated.	Average per cent. killed.	Actual per cent. killed.
2	435	Newly laid	100	100
*1	540	4 days old	100	100
*1	558	8 ,, ,,	100	100
1	485	9 ,, ,,	100	100
Total.. 5	2,018			

* In these cases a small percentage of eggs hatched, but the nymphs, in the process of emerging or just after emerging, succumbed.

SOLUBLE SULPHUR AND HYDRATED LIME.

In using soluble sulphur, hydrated lime was added to the spray primarily to prevent injury to the bursting buds.

TABLE IX—EFFECT OF SOLUBLE SULPHUR, 12½ LBS., HYDRATED LIME, 10 LBS., TO 40 GALS. ON PSYLLA EGGS.

No. of Tests made.	Total No. of Eggs.	Stage of Incubation when eggs were laid.	Average per cent. killed.	Actual per cent. killed.
3	796	Newly laid	100	100
2	700	4 days old	100	100
2	845	8 ,, ,,	100	100
2	500	9 ,, ,,	100	100
Total.. 9	2,841			

CHECKS. Sixteen batches of eggs were left untreated at various times while the foregoing experiments were being conducted. These served as checks. Out of a total of 1,346 eggs, 93 per cent. hatched.

EFFECTS ON NYMPHS. The few tests which were made with lime-sulphur, etc., on recently hatched nymphs were sufficient to show that 1st and 2nd instar nymphs are readily destroyed by lime-sulphur 1-8 and 1-9, with or without starch.

TABLE X—EFFECT OF SPRAY MIXTURES ON RECENTLY HATCHED PSYLLA NYMPHS.

Treatment.	No. of Tests made.	Total No. of Nymphs.	Instar.	Average per cent. killed.	Actual per cent. killed.
Lime-Sulphur, 1–8	2	47	1st	100	100
	2	107	2nd	100	100
Lime-Sulphur, 1–9	3	371	1st	98	95.2
	2	88	2nd	100	100
Lime-Sulphur, 1–9 Starch, 2 lbs. to 40	1	85	1st	100	100
Lime-Sulphur, 1–10	1	85	1st	91	91
Lime-Sulphur, 1 to 10 Starch, 2 lbs. to 40	1	271	1st	96	96
Total	12	1.054			

ORCHARD EXPERIMENTS.

S. M. CULP'S ORCHARD. Our orchard experiments on the control of psylla were conducted at Beamsville in S. M. Culp's thirteen-acre orchard of Bartlett, Duchess, Kieffer, Flemish Beauty, Bosc, Winter Nelis and Anjou pears. The mild winter of 1918-19 was very favorable for the hibernating adults and in the spring they emerged in large numbers and a large deposition of eggs was made.

FIRST APPLICATION. The first application, i.e. the application to destroy the eggs, was put on by means of a spray gun at the usual time,* and the following spray mixtures were used:

(1) Lime-sulphur 1-7
Lime-sulphur 1-9
(2) Starch 2 lbs. to 40 gallons
(3) Lime-sulphur 1-10
Starch 2 lbs. to 40 gallons
(4) Soluble sulphur 12½ lbs.
Hydrated lime 10 lbs.
Water 40 gals.

No one spray mixture, so far as we could judge, proved superior to the others. Each destroyed practically all the eggs and exposed nymphs. The nymphs which had hatched out before the sprays were applied and had sought shelter in the leaf buds beneath the bud scales were uninjured. These averaged about 1.5 to a leaf-bud on all varieties other than Kieffer. On the Kieffer trees the infestation was about .18 to a leaf cluster. This difference no doubt was due to the fact that the Kieffer trees were out in leaf when the spray was applied and therefore did not afford the nymphs much protection.

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* The Pear Psylla in Ontario—Report of the Ent. Soc. of Ont., 1918, pp. 81-90.

All the spraying mixtures injured the buds and foliage to a slight but not appreciable extent. In comparing the Culp orchard with pear trees which had been sprayed with lime-sulphur 1-20, no difference in the amount of "burning" was noticed.

SPRAYING FOR THE NYMPHS. In order to destroy the nymphs which had escaped the first spray and those which had hatched from the eggs of belated females, a second application was made after the blossoms fell. Black Leaf 40, 3/8 pint to 40 gallons, was added to the regular codling moth spray (Lime-sulphur 1-40, arsenate of lead 2½ lbs. to 40) and this was applied with great thoroughness.

This application gave excellent results. When the orchard was examined a few days later only an old psylla was found. The insect increased very slowly in numbers throughout the season and right up to early September its numbers were very insignificant. The foliage was in beautiful condition all season and the trees bore an excellent crop of pears.

W. F. W. FISHER'S ORCHARD. Part of a large pear orchard at Burlington was sprayed at the usual time for the "egg spray," with lime-sulphur wash 1-9 and starch 2 lbs. to 40 gallons and the other and smaller part was sprayed with lime-sulphur 1-7. In addition to this all the trees received the post-blossom application of Black Leaf 40.

RESULTS. Excellent results were secured—the psylla was reduced to very insignificant proportions, and for the first time in many years caused no damage.

EVENING SESSION.

The Evening Meeting was held at 8 p.m. in the Carnegie Library and was well attended by members and others interested. The chair was occupied by the Deputy Minister of Agriculture, Mr. J. H. Grisdale. The Popular Address was given by Mr. C. L. Marlatt, Chairman of the Federal Horticultural Board, Washington, D.C., his subject being "The Federal Plant Quarantine Act" or "How the United States is Preventing the Introduction of Foreign Insect Pests and Plant Diseases." The address was highly appreciated and felt to be of special value to Canadian Entomologists, as was pointed out by the President of the Society, Prof. Lawson Caesar, while proposing a vote of thanks.

THE FEDERAL PLANT QUARANTINE ACT.

C. L. MARLATT, CHAIRMAN, FEDERAL HORTICULTURAL BOARD, WASHINGTON, D.C.

[The following discussion covers the subject in a general way as it was presented extemporaneously.]

Most of you undoubtedly are familiar with the Federal Plant Quarantine Act and with the general features of its administration through a Federal Horticultural Board. This Act was the outcome of a long, hard fight which began twenty years ago as a result of a nation-wide conference called in Washington. This conference included state entomologists and inspectors and secretaries of agriculture and horticulture and other persons interested in plant protection. The need of a federal quarantine which should give protection to the whole United

States had long been felt. The San José Scale excitement of that period was, however, the leading element in bringing about the demand for a federal plant law. As a result of the conference in Washington a broad plant law was drafted which was intended to regulate both foreign importation of plants and also interstate traffic. On account of its breadth of field this proposed law aroused a good deal of opposition and failed to get any real standing before Congress. It was re-introduced at different sessions of Congress for a number of years but never received effective support

In 1908 and 1909 the plant import situation became very serious on account of the sudden increase of infestation of nursery stock received from Europe and Japan by gipsy and brown-tail moths. This was about eight years after the original attempt to get federal plant quarantine law. The failure up to that time to get Congress to act had rather dispelled the enthusiasm of most of us, and the passage of any satisfactory law through Congress was generally looked upon as being practically impossible. The securing of legislation, giving new federal powers, is always a difficult matter and especially so where such powers involve an entirely new subject of legislation encroaching in any degree on the police or other powers of the states..

In the face of the great danger which this country was under from the character of nursery stock importations of 1908-09 I secured permission from the Secretary of Agriculture to draft a new plant quarantine law and to have it introduced in Congress. That draft was the original of the present plant quarantine act. It was a very difficult matter to get this legislation through Congress. The bill was revised and re-introduced many times before it was finally passed in August, 1912, and the story of the long fight to get this legislation would be a very interesting one if I had time to relate it.

The Federal Plant Quarantine Act of 1912 is limited to control of entry of foreign plants and plant products, and to the establishment of domestic quarantines within the United States controlling interstate movement of such quarantined or restricted plants or plant products. As to its foreign features, all plants or plant products of whatever kind are subject to restriction. As to the domestic and interstate features, not only plants and plant products may be restricted but any other article which may be the means of conveying insect or disease enemies of plants, a control broad enough to cover, for example, stone and other quarry products, earth, or even manufactured articles. The law does not provide for any general interstate control of plant traffic except in relation to specific quarantines to prevent the spread of dangerous insects or plant diseases, and in this respect is less broad than the law drafted by the original conference at Washington referred to at the outset of this discussion.

This quarantine act has now been in force seven years. There are now in force under it some fifteen foreign quarantines and seven orders restricting or regulating the entry of plants and plant products and some twelve domestic quarantines. With most of this quarantine and control action you are doubtless fairly familiar. I will discuss rather briefly a few of the more important activities of the Board in respect to these quarantines and restrictions on plant movement.

Perhaps the most important activity of the Board at the moment is in relation to the pink bollworm of cotton. This insect is a very important new enemy of cotton which has recently obtained foothold in Mexico and also scant foothold in Texas. To prevent the further entry of this insect into the United States and to effect its control in the limited areas where it is now established we are now receiving from Congress an annual appropriation of upwards of half a million dollars. The work involved covers a very wide range, including extensive clean-up operations in Texas, the enforcement of a quarantine service between Mexico and the United States, the control of all import cotton into the United States and of the cotton mills in this country which make use of such import cotton, and also the control of cottonseed cake and meal and any other product relating to cotton which may be a means of introducing the insect.

Another important quarantine feature under the Board is the white pine blister rust quarantine, which has for its special object the protection of the great pine areas of the western half of the United States from infestation from the eastern half of the United States where this disease has gained wide and probably firm foothold.

One of the later quarantines has relation to the European borer which has recently obtained foothold in the neighborhood of Boston and in a limited area near Albany, N. Y. We are asking Congress for an appropriation of $500,000 for quarantine and other control work in relation to this borer. Inasmuch as this insect is known to infest practically all succulent vegetation, even grasses, and is so concealed as to make its discovery difficult, its extermination is recognized as an impossibility, but if it cannot be exterminated, it certainly can be controlled. I do not believe in being unnecessarily alarmed over the introduction of any new pest, and in the case of this new corn borer, the last year's experience has demonstrated that there are at least four important controlling factors which may later on show this pest to be a comparatively unimportant one, certainly indicating that Canada, for example, need have very little fear on account of it. These hopeful or controlling factors are: (1) for the northern areas of corn culture, single-broodedness with accompanying negligible damage indicated; (2) possibility of cultural control by the elimination of weeds; (3) the immunity now indicated for ordinary field corn, and (4) the possibility of effective egg parasitism.

(The introduction of this insect through the agency of imported broom corn and its probable wide dissemination in the United States was discussed in some detail.)

Another problem that has recently come up to the Board is the potato wart disease, one of the three plant enemies specifically mentioned in the Federal Quarantine Act to be immediately guarded against. This disease was evidently brought into this country in the winter and spring of 1911-12 before the Quarantine Act was passed. The Department of Agriculture through the Federal Horticultural Board is co-operating with the State of Pennsylvania in a thoroughgoing campaign to eradicate this pest. The work of the last season, now concluded, has presented a very much more hopeful outlook also with respect to this potato disease. In other words, the principal commercial varieties of potatoes grown in the United States have developed a substantial immunity to this disease and it looks very possible, therefore, that it can be controlled through the growth of these immune varieties and other varieties, the immunity of which has already been demonstrated in European countries.

These are a few of the important subjects which the Board now has under way. Other subjects are the Oriental fruit or peach moth which came from Japan on ornamental cherry stock and has obtained rather wide foothold in the District of Columbia, Maryland and Virginia and also in New York and a few other places. This pest might have come to this country on any shipment of Japanese ornamental cherry or peach stock, but apparently obtained its first foothold through a shipment of cherry trees made as a gift of the City of Tokio of Japan to the City of Washington. The first lot was of large sized trees and so seriously infested with various insects that the trees were burned. A second sending was later made of young trees and these were apparently in a fairly healthy condition and at least had been so pruned back that any evidences of the work of this insect had been entirely removed. Incidentally, it may be said that it is a very difficult matter to detect an insect about which you know nothing and which you are not anticipating. The inspector does not know where to look for it. In the case of this pest, even with full knowledge of its habits, it is a very difficult insect to detect by inspection, so carefully concealed is it in its hibernating situation.. This infestation was not discovered at the time and the trees were planted in Washington's Riverside Park. The local infestation of the District of Columbia and adjacent Maryland and Virginia has undoubtedly originated from this importation of flowering Japanese cherries. The incident illustrates the futility of inspection, even when carefully conducted, as a means of detecting unknown or unfamiliar pests and is one of the strong arguments for the more radical quarantine action which the Board has recently taken in respect to all such ornamental and nursery stock.

Another pest recently imported is the so-called Japanese beetle. It was introduced apparently about eight years ago on iris stock imported by the Dreer nurseries. It now has a very strong foothold in a comparatively small area in New Jersey opposite Philadelphia. This insect lives nine months of the year in the ground out of sight, is a strong flier, feeds miscellaneously on all sorts of vegetation, and there is therefore very little likelihood that it can ever be exterminated. By federal and state appropriation, however, a strong effort is being made to control this insect and to demonstrate the possibilities of exterminating it if such possibilities exist.

One of the last, and perhaps one of the worst, plant pests that has turned up in this country is the "take-all" disease of wheat which has recently been determined in a few fields in southern Illinois and in a similarly small area in Indiana. War conditions and food shortage led to a movement looking to the importation of wheat from Australia into the United States to replace American-grown wheat which was being exported to meet European needs. A knowledge of the risk from such Australian wheat led the Board to declare a federal quarantine and to place such restrictions as to disinfection and use of such wheat as to safeguard its entry. While these steps were in progress this disease was discovered in a small area in southern Illinois and later in a small area in Indiana. The method of entry of this disease is unknown and nothing has been found to indicate that it came with any wheat imported from Australia for commercial purposes. It is probable that its entry was due to some experimental importation of Australian wheat. Very energetic action was undertaken in cooperation with the two states concerned to stamp out the disease in the infected areas, including the prohibition of the further growth of wheat in such areas and the disinfection of the grain and the burning of infected straw and stubble.

These seven or eight quarantine subjects which I have mentioned, together with the nursery stock quarantine, are the big items of work which the Federal Horticultural Board has under way at the present time.

I will close with a brief discussion of the nursery stock, seed and plant quarantine, a subject which has perhaps as great interest for you as any of these others and is one of the oldest of our lines of work. This quarantine has been administered since the passage of the Act in 1912, but has been revised under what is known as Quarantine No. 37. For seven years the Board had been endeavoring to prevent the entry of pests with imported nursery stock and other plants and seeds by a system of foreign inspection and certification with re-inspection of imported goods at destination in this country. Under this system all foreign countries wishing to engage in plant traffic with the United States on a commercial scale have been required to establish an adequate inspection and certification service. Practically all of the important countries of the world have now established such service in response to the demands of the plant quarantine act of the United States. The benefit of this service, as evidenced in the character of the plant shipments to this country, has been tremendous. Whereas, before these inspection and certification measures were compelled by our act, thousands of instances of browntail moth and gipsy moth infestations occurred in a single year in our plant imports, there are now comparatively few instances of these pests being found. Freedom from all kinds of insect pests and plant diseases has been very marked as compared with the old conditions, but, after all, it is only a *marked* improvement, not absolute freedom. These pests still come in. For example, sixty-three instances of browntail and gipsy moth infestations have been discovered by the inspection service in the seven years since the act went into effect, and it is unfortunately not at all certain that all infestations by these insects were discovered in re-inspection at destination in this country. Hundreds of other pests have also been discovered as a result of these inspections. This state of affairs was the important reason leading to the enactment of a new nursery stock, plant and seed quarantine, namely, Quarantine Order No. 37. Before this quarantine was promulgated the subject was given long and careful consideration. A thoroughgoing investigation was inaugurated by the Board, bringing into its scope all the departmental plant experts of its various bureaus. The matter had also been under consideration for several years by state men through their organizations. Finally the whole subject was discussed fully at a hearing at which the producing horticulturists and the state experts of the whole country were brought together. This discussion indicated a practically unanimous support of a quarantine which had been outlined and which was substantially the same in scope as Quarantine No. 37.

Following this hearing the matter was given further study by our experts and some of these experts visited producing horticultural establishments of this country to discuss the needs of this country as to plant importations. Some months later a final conference was called of all the interests concerned and to this conference was submitted a provisional draft of the quarantine. It was eight months after the quarantine had been first broached that it was finally promulgated. The action of the department and the Board, therefore, can certainly not be charged with having been precipitant. The quarantine became effective June 1st, 1919. It has aroused a wide criticism and protest, much of this protest being based on misrepresentation. It has been represented, for example, that the quarantine will prevent the entry into the United States of new plant creations of Europe and other foreign countries and that America will be forever deprived of all such additions to its horticulture and floriculture. There is no foundation for this charge. The quarantine does not really prevent the importation of any plants into the United Satates for which a real need can be shown. Provision is made in the quarantine for the entry for introduction purposes of any new plant creations of Europe or other foreign countries. Furthermore, the quarantine provides for the entry of any reasonable amount of plant material not available in the United

States which is needed for the development of reproduction enterprises to supply home needs. All such special introductions, however, must be made through the Department of Agriculture and will be subject to all the safeguards which the highly developed inspection service of the Department in Washington can give, including, if necessary, detention in quarantine or even the destruction of the imported material if its condition of infestation is such that such destruction is determined as necessary to prevent entry of pests or plant diseases. It is not probable, however, that material offered for entry under this provision of the quarantine will be often so infested as to require such drastic action. As a result of the misrepresentation referred to and other phases of misrepresentation Congress and the Department of Agriculture at Washington have been flooded with letters and petitions in opposition to the quarantine. This opposition has largely come from certain importing interests which will be necessarily restricted in business by the quarantine.

The experts of the Department of Agriculture, and, I think, also the thoughtful horticultural interests of the country, are convinced of the need of such quarantine action. Undoubtedly this quarantine will lead to a development in this country of horticultural productions to take the place of the articles which have hitherto been obtained from foreign sources. In this way it will indirectly be the means of developing American horticulture and floriculture. It is only fair to say to those who go into production enterprises to supply the material the importation of which has been cut off that this quarantine in all probability in its main lines will stand and that such enterprises will therefore fill a permanent place in our horticulture. This does not mean that Quarantine No. 37 is not subject to modification or change, but it does mean that the department and the experts of the country are convinced that it is sound in principle and that its enforcement practically along its present lines will afford a needed protection for the forest, fruit and farm interests of this country. Wherever an error can be shown it will be corrected but changes will not be made for personal, selfish, or commercial interests, however powerful their backing, to the loss of the principle of protection which underlies and is the basis for this quarantine.

HOPKINS' BIOCLIMATIC LAW.

Wm. Lochhead, Macdonald College, Que.

Economic Entomology is ever drawing on other sciences for aid in the solution of its problems. It is indebted to chemistry for help in solving the problem of insecticides, to bacteriology and botany in the effort to work out means of controlling certain insects by bacteria and fungi, to agriculture for the introduction of farm practices that tend to control certain insects, to zoology for a knowledge of the habits of birds and other animals that feed upon insects; to physics for suggestions and explanations regarding the construction of many useful devices, and to Meteorology for the help it has given toward a better understanding of the distribution of organic life and of the factors that influence its seasonal activities. Without a knowledge of these sciences an economic entomologist may make but little headway when brought face to face with a new practical problem.

One of the most recent and most far-reaching contributions to Economic Entomology is the Bioclimatic Law of Dr. Hopkins of the U. S. Bureau of Entomology.

THE SCIENCE OF PHENOLOGY. From time immemorial agricultural practice has been guided by meteorological factors. Primitive man, no doubt, soon discovered that his food plants required a limited period to reach maturity and that every growing season had its earliest and latest dates for planting. He soon learned, too, that these dates varied with different regions, with different seasons, and with local weather conditions. In the course of time a mass of observations accumulated, which constituted the basis of farm practice. Naturally much error crept into the observations and false deductions were drawn from certain coincidences, but on the whole the early growers of plants were guided by experience. Their contact with nature was very intimate, perhaps more intimate than that of the farmers of to-day. They knew the times of opening of the buds of the various shrubs and trees, and of the arrival and departure of the birds, and learned to associate certain farm practices with these events as natural guides.

For example, the time of the appearance of the blossoms on the maple was considered by many people a suitable time to begin gardening; the blossoming of blackberries the best time for bean planting; the blooming of the locust trees for the planting of cotton; the mouse-ear size of white oak or maple leaves for the planting of corn; the opening of the elder flowers for the sowing of turnip seed; the ripening of the elder berries for the harvesting of the early onions; and the ripening of the burs of the small cockle-bur for the harvesting of the late crops. In other words, the early farmers associated their farming operations with periodic phenomena connected with some tree, shrub or plant.

In the eighteenth century when plants began to be studied scientifically attention was given to the recording of observations on such periodic phenomena as the opening of the buds, the time of flowering, the ripening of the seeds, etc., which give rise to the science of phenology. At the same time studies were made to determine the geographical distribution of plants and animals.

In the course of these investigations the rates of variation in the dates were partially determined for different latitude, longitude and altitude, but the number of data was not sufficient to permit a definite law of variation to be formulated.

It was early observed that while temperature was the main controlling factor in bringing about variations in periodic phenomena other factors also played an important part. Dr. Merriam's maps of the zonal distribution of plants and animals into Life Zones were largely based on the temperature factor and are very suggestive and helpful in matters of life distribution. These maps, however, do not furnish information regarding the dates of periodic phenomena in different regions and districts so much desired by the economic biologist in the matter of application of methods of control in the different regions.

As an example, the old spraying calendars, based on regional distribution rather than phenological phenomena, have been discarded as unsatisfactory, and instead "some periodic event in the plant to which the spray is to be applied is given as the index to the time to do the work."

Dr. A. D. Hopkins was the first person in America, I believe, who attempted to apply this science of phenology to the solution of entomological problems, especially those relating to certain forest insects in West Virginia. Later it was applied in connection with the control of the Hessian Fly, and as an outcome of the investigations a definite Bioclimatic Law was formulated, which forms a working guide for farm practice and biological research over the entire continent. In connection with this law Dr. Hopkins has prepared a system of maps and com-

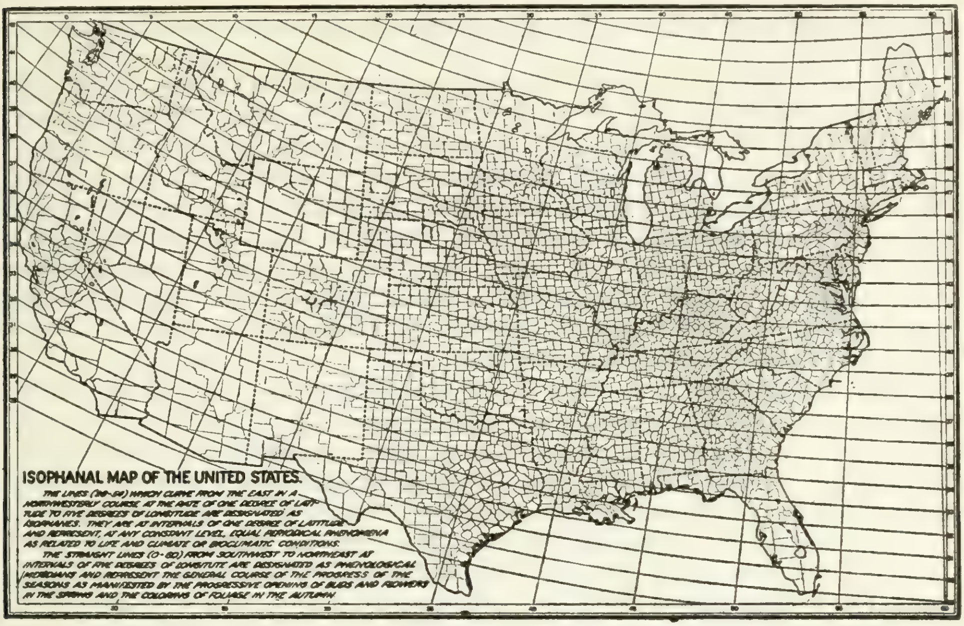

ISOPHANAL MAP OF THE UNITED STATES.
THE LINES (30-54) WHICH CURVE FROM THE EAST IN A NORTHWESTERLY COURSE, AT THE RATE OF ONE DEGREE OF LATITUDE TO FIVE DEGREES OF LONGITUDE ARE DESIGNATED AS ISOPHANES. THEY ARE AT INTERVALS OF ONE DEGREE OF LATITUDE AND REPRESENT, AT ANY CONSTANT LEVEL, EQUAL PERIODICAL PHENOMENA AS RELATED TO LIFE AND CLIMATE OR BIOCLIMATIC CONDITIONS.
THE STRAIGHT LINES (0-60) FROM SOUTHWEST TO NORTHEAST AT INTERVALS OF FIVE DEGREES OF LONGITUDE ARE DESIGNATED AS PHENOLOGICAL MERIDIANS AND REPRESENT THE GENERAL COURSE OF THE PROGRESS OF THE SEASONS AS MANIFESTED BY THE PROGRESSIVE OPENING OF BUDS AND FLOWERS IN THE SPRING AND THE COLORING OF FOLIAGE IN THE AUTUMN.

Fig. 1. Isophanal Map of the United States in 1 degree isophanes and 1 x 5 degree quadrangles to illustrate method of expressing the geographical constants of the Law.

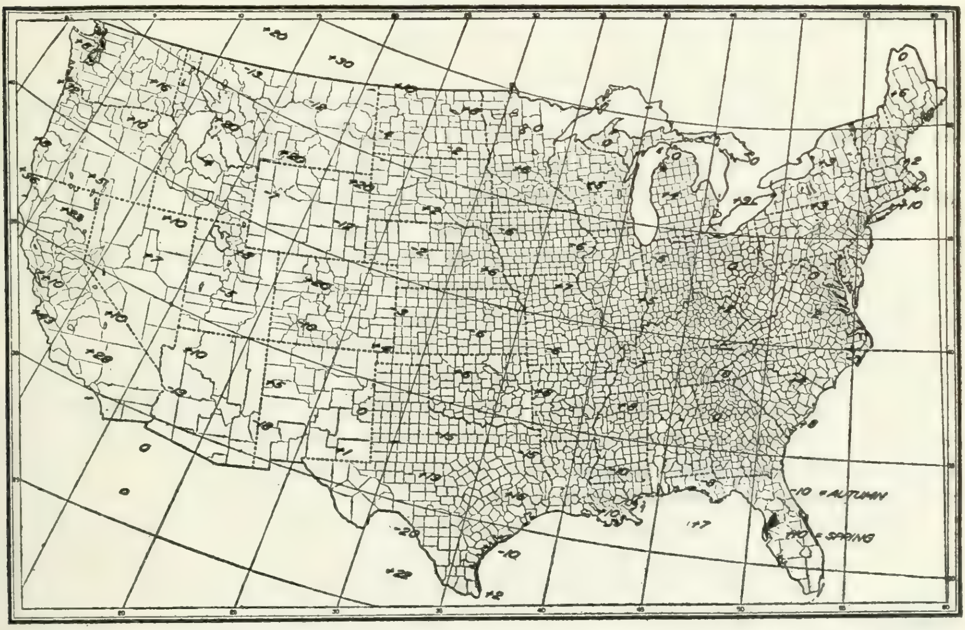


Fig. 2. Isophanal Map of the United States in 5 degree isophanes and 5 x 5 degree quadrangles to illustrate method of designating phenological areas for the study of influences which contribute to time, altitude or latitude departures from the geographical constants. The estimated minus (earlier) and plus (later) departures in days from the computed time constant for spring and autumn events, as given for each quadrangle, are based on a study of more than 40,000 reports on the date wheat harvest begins and on other statistics of planting and harvest dates for wheat, potatoes, etc., and represent averages for the entire quadrangle.

puting calendars and tables which aid very much in the computation of phenological dates.

Dr. Hopkins informs us that the rates of variation in the dates of periodic events were determined earlier by Schubler in 1830 for the distance between Parma, Italy, and Greifswald, Prussia, as 4 days for a difference of about 325 feet of altitude and 1 degree of latitude. Although Quetelet, in 1846, was aware of the influence of longitude, it remained for Fritsch, in 1865, to state that each degree of longitude westward made a variation of 4/10 of a day. In 1893 Ihne found the variation to be about 9/10 of a day. Dr. Hopkins, in 1900, concluded from his investigations in West Virginia that the rate of variation was 4 days to 1 degree of latitude and 400 feet of altitude, and later in 1915 concluded that there was a variation of 4 days to 5 degrees of longitude.

THE BIOCLIMATIC LAW. The Bioclimatic Law may be stated as follows: *The variation in the time in which periodical events occur in the seasonal development and habits of plants and animals at different geographical positions within the range of their distribution is, other things being equal, at the rate of four days for each degree of latitude, five degrees of longitude, or 400 feet of altitude.*

According to this law, lines running from the east toward the north-west at the rate of one degree of latitude to five degrees of longitude represent the same constant or average date of periodical phenomenon for any given level throughout their length. Such lines are called *isophanal lines,* and in accordance with this law Dr. Hopkins has constructed isophanal maps of the United States (Fig. 1). Meridian lines drawn at right angles to the isophanal lines are called *phenological meridians.*

The influence of certain local factors that modify the average dates of the periodic phenomena for each quadrangle, such as topography, lakes, large rivers, rainfall, sunshine, etc., according to their intensity, is marked on each quadrangle as plus (later) or minus (earlier) departures for both spring and autumn (Fig. 2).

Dr. Hopkins believes that the amount of departure of the actual from the computed date for any locality represents the intensity of the action of local factors.

For example, in Florida the departures are ten days earlier than computed time for autumn and ten days later for spring events; for Western Ontario only nine days later for autumn. Such departures were based on a study of more than 40,000 reports on the date wheat harvest begins.

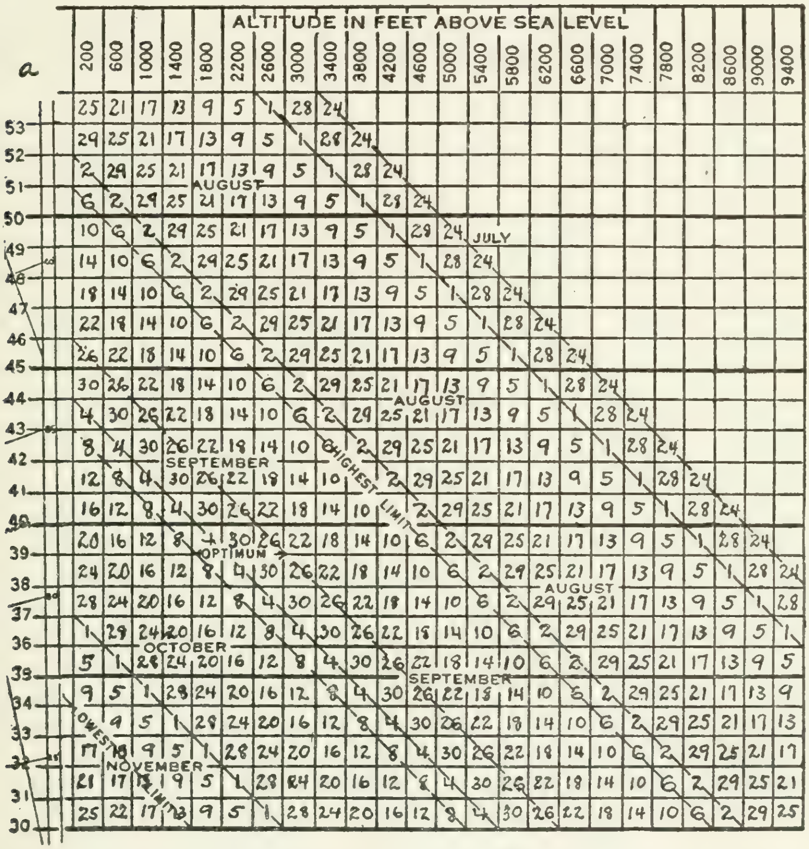
The departure constants were obtained by establishing *phenological bases* or "localities where a sufficient number of observations have been made to establish corrections for local and regional influences, so that the date of any seasonal event recorded there may serve as a reliable basis for the computation of corresponding dates for the same event at any other geographical position within the same or different regions of a country or continent."

Wooster, Ohio, was taken as the base for fall wheat seeding on account of the thorough work done there by Webster in connection with the determination of Hessian fly-free dates, while Minnesota was taken as the base for spring wheat seeding.

In accordance with the law and with the amount of departures for different localities Dr. Hopkins, in 1917, proposed to the U. S. Department of Agriculture to make wheat seeding map-calendars for all the States for the purpose of increasing the wheat yields for 1918 by the control of the Hessian Fly. On account of the limited time, however, posters with maps and instructions were prepared for only New York, Pennsylvania, Illinois, Indiana, Nebraska, New

Jersey, West Virginia, Oklahoma, Virginia, North Carolina, and Tennessee. (Fig. 3.)

Fig. 3 is a calendar of winter wheat seeding date constants for map (Fig. 1) computed for latitude, longitude and altitude. To illustrate its use let us select the Guelph region. This lies in the quadrangle bounded by the phenological meridians 45 and 50 and the isophanes 47 and 48 and at an altitude of 1,000 feet. By referring to Fig. 3 it will be seen that the date for winter wheat seeding is September 10th for an altitude of 1,000 feet. Next, by referring to Fig. 2 we find the departure constants are 0 for fall events. For this locality, therefore, the best date for winter wheat seeding is September 10th.


ALTITUDE IN FEET ABOVE SEA LEVEL
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AUGUST
JULY
AUGUST
SEPTEMBER
HIGHEST LIMIT
OPTIMUM →
AUGUST
OCTOBER
SEPTEMBER
LOWEST LIMIT
NOVEMBER

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21	17	13	9	5	1	28	24	20	16	12	8	4	30	26	22	18	14	10	6	2	29	25	21
25	22	17	13	9	5	1	28	24	20	16	12	8	4	30	26	22	18	14	10	6	2	29	25

Fig. 3. Calendar of wheat seeding date constants for Isophanal Map, Fig. 1. *a* Isophanes. The dates in this calendar are the computed constants for the given altitudes to be corrected for the 5 x 5 quadrangles of Fig. 2, by adding the + and subtracting the —autumn date which will give the general average date for the average altitude and average season.

It is impossible in the short time allotted me for the presentation of this paper to give in detail the many interesting studies made by Dr. Hopkins in the formulation of his Bioclimatic Law. Such details will be found in *Supplement No. 9 of the Monthly Weather Review*, issued May 1st, 1918, and in an article in the June, 1919, number of the *Scientific Monthly.*

It seems to me that Dr. Hopkins' Bioclimatic Law is an important contribution to service inasmuch as it is based on phenological phenomena which are the best means of determining the influence of all the complex factors that play upon plant and animal life.

I have already referred to the use of the Law in the control of the Hessian Fly. Dr. Hopkins has used it in connection with certain forest insects, viz., the Southern Pine Beetle (*Dendroctonus frontalis*), the Western Pine Beetle (*D. brevicomis*), the Mountain Pine Beetle (*D. monticolae*), and the Pine Bark Louse or Spruce Gall Louse (*Pineus strobi*).

By means of a map-calendar the dates for the beginning and ending of control measures between the autumn and spring flights can be recommended, in the case of the Pine Beetles, and in the case of the Pine Bark Louse the date of hatching and time of moving about.

Dr. Hopkins believes that the Law can be applied with great advantage in farm practice as a means of determining the dates of best seeding and harvesting for the production of maximum crops. While he has shown the application of the Law to winter and spring wheat he is of the opinion that it can be applied equally well to all kinds of crops.

Moreover, it can be used for the making of reliable spray calendars in orchard practice for the control of insect and fungus diseases.

This Law, moreover, is of value in determining the northern limit in the geographical distribution of species of plants and animals. It is, therefore, a valuable supplement to Merriam's work on Life Zones.

Regarding the value of phenology Dr. Hopkins says: "Properly recorded and correctly interpreted there is nothing perhaps to equal the records of the dates of periodical events in plants and animals as indices to the bioclimatic character of a place or local area, because such events are in direct response, not to one or a few, but to all the complex elements and factors of the environment which no artificial instrument or set of instruments yet available will record. In other words, while species and varieties and even individuals of the same species and variety respond in a more or less different degree to the same complex influences, there are certain constant elements in the response of individuals and groups of varieties and species which, if properly interpreted, will serve as a key to the bioclimatic character and conditions which distinguish a particular region, locality, or place from that of other nearby or distant ones.

The Bioclimatic Law in Canada.

Most of the data from which Dr. Hopkins prepared his maps were obtained from the United States, and it will be observed that the departures from the Law constants are practically absent from the Canadian section of his maps. No doubt the reason for this absence was the lack of sufficient data from Canada.

The writer believes, however, that Canada has the data if they can only be compiled. This country has not only a large number of experiment stations scattered from the Atlantic to the Pacific, but also a large number of reports prepared by Federal and Provincial agencies, that could supply the necessary data relating to phenological phenomena. A compilation of such data would be most valuable in extending the practical application of the Bioclimatic Law to the different sections of Canada. The writer expresses the hope that some competent government official may be detailed to gather such data, so that Canada may reap the advantages which may flow from the application of the Law to agricultural practice and to the solution of many entomological and other problems.

FRIDAY MORNING, 9 O'CLOCK.

LOCUSTS IN MANITOBA, WITH SPECIAL REFERENCE TO THE OUTBREAK OF 1919.

Norman Criddle, Dominion Entomological Laboratory, Treesbank, Man.

We have had locust plagues in the Prairie Provinces as far back as history will take us; that they occurred long before that time is extremely probable. There were, however, no crops in those days and very few observers, consequently the locust outbreaks were imperfectly recorded and our knowledge of the species involved is extremely dubious. There were at least seven distinct locust outbreaks in the Nineteenth Century most of which extended over two or more years. The first was recorded from Lord Selkirk Red River colony in 1818, another probably occurred about 1830; then we have records for: 1855-57, 1864-66, 1868-70, 1872-75, 1897-98, and 1900 to 1904 of the new century. In other words there were fully 22 locust years in the last hundred. Another significant point is that in almost every instance the infestation lasted two or more years.

Reading from Riley, and from Lugger of Minnesota, one notes that by far the most important injury in all their records was attributed to the Migratory locust, *Melanoplus spretis,* a species which was supposed to have its permanent abode in the foothills of the Rocky Mountains and from that breeding ground to spread far over the surrounding country. In his later reports Lugger also attributes much to the Lesser Migratory locust, *M. atlanis,* and in a smaller extent to the Pellucid locust, *Camnula pellucida.* Judging from more recent occurrences I think it would be safe in concluding that these latter species were present in most of the former outbreaks, especially the Lesser Migratory locust which is, after all, very like *spretis.*

It is evident from this brief summary of the past, that we can expect locusts to become troublesome at intervals of about 15 years though these periodic visits are not, of course, by any means regular. The insect's appearance depends largely upon meteorological conditions among the most important of which are abnormally dry seasons, especially during May and June. There is one other point to bear in mind and that is while we talk of a locust outbreak every 15 years we should remember that such an invasion does not necessarily cover the whole country because, as a rule, it is far from doing so. Indeed most of our outbreaks have been confined to the southern portion of the province.

My personal experience with locusts dates back to 1900, when we had an outbreak in our neighbourhood involving our own farm among the rest. The species concerned was chiefly *atlanis* though there were a fair number of *spretis* among them for the first two years, after which that species disappeared and has not, so far as I am aware, been heard of since. Much crop was destroyed the first season owing to lack of knowledge and proper equipment. The second year, however, we learned the merits of poisoned baits and from that time forward the comparatively small losses were due almost entirely to neglect.

It is fourteen years since the events I have just recorded took place and during the interval we have been free from locusts in the province. The present year, however, has once more brought the insects into prominence.

The new outbreak is a serious one and promises to become still more so. Fully half a million acres are already involved in the southern portion of Manitoba, while there are several areas of lesser extent isolated from the rest.

Strange as it may seem this severe outbreak came to us as a complete surprise, not a report came in of injury the previous year though we know that the insects must have been present in large numbers. This shows how little one can rely upon farmers for such information and indicates how necessary it is to have reliable scouts to be on the watch for just such a plague. The savings from such observers, on this year alone, would have been sufficient to pay the salaries of half a dozen scouts for the next ten years. When information did reach us the young hoppers were already beyond immediate control, and when I arrived at the infested area whole fields had been swept bare; added to this was the fact that we were totally unprepared and in consequence all the necessary supplies were lacking. It was a week before poison could be shipped into the affected territory, and even then it could not be secured in anything like sufficient quantity to cope with the outbreak. The Winnipeg labor strike was partly to blame for this and it also greatly hampered transportation when the supplies were shipped from the east. These are a few of the first difficulties we had to contend against. Next we had to educate the farmers as to the means of control and this in itself was no simple task. Most of the farmers involved had never witnessed a locust outbreak before and when they saw the millions upon millions of tiny hoppers turning the green fields black, many lost heart. Scoffers, too, were numerous, but some enterprising men remained and by their aid examples were provided which added much to our own demonstrations. Dead hoppers, small and hard to find among the grass, were pointed out and as their numbers increased, and the dark areas grew no larger, farmers took heart again; but only temporarily, soon fresh hordes were making their way over the bodies of their dead companions and commenced to eat new inroads into the crop. It was at this time that the human barometer fell very low indeed and but for the former experience of a few men we might have had difficulty in keeping the work going. Some farmers did indeed lose all hope and, later, their crops also. Others of more persistent character continued in their efforts and ultimately had the satisfaction of at least saving part of their crops. As for the dead locusts it is hard to realize the vast numbers that covered the ground. In one instance we found an average of 244 dead to the foot over a large field, that is to say approximately 260 bushels per acre. On one square foot at another place I counted 641 dead locusts, two-thirds of which were adults. I give these instances from many similar ones. Had these locusts been permitted to breed they would have produced at least 6,000 eggs to every square foot of land on the field and these in their turn would have provided locusts enough to destroy fully two thousand acres of crop next year.

Much of the success obtained was due to the Provincial departments supplying the poison free, while the municipalities, as a rule, provided the bran and attractants. There was some delay, however, before these measures were adopted; many farmers in the meantime, procuring their own materials.

Our measures of control did not differ to any marked extent from those in use elsewhere: we relied chiefly upon the Kansas bait partly because it was more easily mixed and also because it seemed more attractive to the grasshoppers than the Criddle mixture. Another point in favor of the former was the difficulty in securing horse droppings in sufficient quantity. However, there were some farmers in nearly every district who spoke very highly of the droppings and used nothing else. Two instances came to my notice where the farmers had used manure spreaders and while this might seem a rather extravagant method of spreading poison, we must take into consideration the cheapness of the material which would permit a far greater quantity to be used in comparison with Kansas bait, at the same cost. The results of this method were, at least, all that could be desired and probably exceeded any other.

Later in the season a large type of hopper catcher was used, this being an improved model of the old hopper-dozer. It was sixteen feet long and some three feet in height, made, apart from the frame, with galvanized iron. With this implement, drawn by two horses, some farmers claimed to have caught as many as fourteen bushels of locusts in one day. Certainly some excellent work was done with them while the enthusiasm lasted, but in spite of the apparent success I am of the opinion that the machines are a poor substitute for poison baits.

There is one feature in the present locust outbreak that makes it different from any other we have experienced in western Canada and that is the fact that we have had to deal with an entirely different kind of locust. Our previous knowledge referred entirely to the genus *Melanoplus* and chiefly to the Migratory and Lesser Migratory species, whereas the present insects involved are largely the Pellucid locust. It was, perhaps fortunate that we visited the infested districts before giving advice and more so that we were able to distinguish the species involved, because the habits of the two genera are different in many respects. For instance the species of *Melanoplus* we have been dealing with, oviposit in and around small openings amid sparse vegetation, or more frequently still, in the stubble fields. Camnula, on the other hand, avoids such places and instead, selects the roadsides and sodded areas, depositing its eggs in the clumps of grass. It thus happened that instead of swarming of the stubble fields, as might have been expected before knowing the species, the insects came from the roadsides. This was how conditions were in most districts, but in a few *Melanoplus* predominated, while in others, all kinds were found together.

It is an interesting sight to see the small hoppers all moving in one direction, as if all were induced by a similar impulse. These movements may be towards the sun or away from it, with or against the wind so that it is difficult to arrive at a reason for the uniformity of movement. One thing is certain: having once located a field they seldom abandon it while food remains available. Moving inward they first steadily work their way towards the centre of the field while the rear guard clean up what is left, or that which re-sprouts. Large masses of these hoppers may also be seen in the morning while the dew is still on the herbage, sunning themselves before partaking of the morning meal. It is then that they sometimes gather along roadsides so thickly that the road looks black with them; on other occasions they have been known to collect on the railway irons in such numbers as to actually stop the trains. The greatest sight of all, however, is to see a migration after the insects have attained the winged stage. At such times they move in regular swarms and drift along with the wind like a thick snow storm. Such a swarm may last for hours or but a few minutes. All depends upon the weather, when the sun comes out bright and hot the insects are on the wing in a moment, should a cloud obscure that orb's surface, the locusts as quickly drop to earth again. The flights, too, seem to be infectious because no sooner do the insects from a distance drift past than those in the vicinity fly up to join them and so add to the moving swarm. To witness such a sight for the first time cannot but prove a joy to the naturalist, but it has a very different effect upon the farmer, who perhaps sees the hard work of months brought to nothing in a few hours. We had instances, at such times, when hundred acre fields of wheat where destroyed in two days by successive swarms of migrating locusts. Other fields, however, were actually freed through the insects moving elsewhere. It was owing to these habits that some farmers who had done little still harvested some crop while other men, working hard to prevent the locusts depredations, lost everything.

The almost daily flights mentioned above, naturally scattered the insects far afield and over much new territory, but while they thus moved in vast numbers their movements were much closer to the ground than are those of the Lesser Migratory locust which often rises far above the area of ordinary vision. *Melanoplus* also takes part in the low flights though less frequently. All species commence to migrate soon after they obtain wings, and continue, on and off, for fully a month and a half. In 1919 they commenced to fly about the middle of July and continued for a considerable time after the insects had begun to oviposit. Indeed there is strong evidence to show that the female frequently deposited one lot of eggs and then moved to other territory to complete her work.

During the wingless stages, and for a time afterwards, the Pellucid locust spreads all through the fields and in this habit resembles the common species of *Melanoplus*, but as the breeding season draws near it returns to the sod land, while the latter remain on the stubble to deposit their eggs. This habit alone usually enables us to distinguish the species involved without seeing it. For instance, should a farmer report extensive cutting of twine we are reasonably safe in referring the injury to species of *Melanoplus* because *Camnula* will be on the sod at the time the grain is cut. The only other insect, therefore, that could be involved would be the larger crickets (*Gryllus assimilis*). Another difference is in the kind of soil preferred, the Lesser Migratory locust inhabits sandy land, *Camnula* the richer soil; though both prefer the dry uplands for egg-laying.

The conditions favoring the increase of any particular species are almost sure to be beneficial to the development of others, consequently there are always others present of lesser importance, and in 1919 we had *Melanoplus minor*, which is the earliest to develop; *M. packardii, gladstoni, dawsoni, bivittatus*, and *femur-rubrum*. The first three are upland species while the last two prefer slightly moister situations. I found a remarkable little outbreak of *M. gladstoni* near Pilot Mound which is, I believe, the first occasion that this species has been recorded as notably injurious.

As I have already mentioned, the eggs of *Camnula* are deposited along roadsides or in pasture fields. Contrary to the general idea the insects, with us, prefer the higher land rather than low spots. Any sodded soil is suitable provided it is comparatively dry. In preparing to oviposit the female selects a low clump of grass in which she forces her abdomen to that the egg mass, that she deposits, is situated among the grasses roots. The eggs, however, are always close to the surface and when the grass clump is a dense one, may actually protrude above ground though, of course, hidden amid the base of the plant. Owing to the peculiarity in selecting egg sites the egg pods, too, are frequently massed together and often actually touching one another in their density. In this connection I have found as many as 84 egg sacks within a square foot, that is to say approximately 2,000 eggs.

It was unfortunate that the seriousness of the 1919 outbreak prevented the few of us engaged in control measures from conducting investigations as to the effectiveness of the various poisons or attractants. When it is considered, however, that the Dominion had but one man in each province and that there was work enough for a dozen, it will be readily understood why we were obliged to devote all our time to the immediate needs of the farmers. In other words, we became, for the time being, demonstrators and encouragers rather than research men. When we view the results, however, we cannot but feel gratified at the thousands of acres that were saved even though much was lost also. We have surely demonstrated what can be done with more effective preparation, and as a result organization is well under way to combat the probable outbreak of next year. We know where the eggs are, having made a careful survey during the autumn months and this knowledge will help us much in locating the young hoppers as soon as they hatch out. We can then attack them immediately rather than wait until they invade the crop.

Deep ploughing has undoubtedly accounted for many eggs, especially in those districts where *Melanoplus* predominated. Unfortunately the sod land is much more difficult to attend to and I fear that it will, in most instances, remain untouched. Experiments conducted at the Treesbank Laboratory, have shown that the eggs, even when incased in their usual covering, cannot withstand a temperature of 90°F. for many hours when the sun is shining and, therefore, exposing them early in the season is an effective means of destroying the eggs. A lesser temperature, however, is not as effective though exposing the eggs to the vicissitudes of autumn, winter and spring may help to prevent their hatching.

Turning to the prospects for next year, we cannot, of course, predict with certainty that there will be an outbreak, as weather conditions may intervene, but judging from the past the chances for this are small, in which case we may expect a worse and more widespread outbreak than the one of 1919. As I said before, I think we shall be prepared. This, however, is a matter that the provinces are chiefly taking in hand. Naturally we have all been working together against the common enemy and for myself, I should like to take this opportunity of expressing my appreciation of the splendid co-operation that has taken place. We have been in the field together and worked together for the common benefit.

LIFE-HISTORY NOTES ON SOME SPECIES OF ACRIDIDAE (*ORTHOPTERA*) FOUND IN BRITISH COLUMBIA.

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In presenting some notes on some species of Acrididae occurring in British Columbia I do so with some hesitation for the reason that I have not been able to complete the life-history of many of the species. My hope, however, is that such notes as I have prepared will prove of service to those undertaking any further ecological and life history studies on western species of Acrididae.

My thanks are particularly due to Mr. R. C. Treherne for his encouragement and advice during the past two years in this work, and to Messrs. L. P. Rockwood of the U. S. Federal Entomological Station, Forest Grove, Oregon; and Norman Criddle of the Dominion Entomological Branch, for their kindness in assisting me in the identification of species.

The following species represent the majority of the various Acrididae I have collected in British Columbia during the past two years, and the localities where they were taken.

Acrydiinæ (Tettiginæ)

Acrydium granulatum Kirby. Penticton.

Acrydium ornatum Say. Fairview.

Acridinæ (Tryxalinæ)

Pseudopomala brachyptera (Scudder). Vaseaux Lake. Fairview.

Akentetus unicolor (McNeill). Fairview. Westbank.

Orphulella pelidna (Burm). Fairview.

Chloealtis conspersa Harris. Salmon Arm.

Chloealtis abdominalis Thomas. Salmon Arm. Vernon.

Stirapleura decussata (Scudder). Naramata. Penticton. Fairview. Vaseaux Lake. O. K. Falls. Keremeos.

Ageneotettix scudderi (Burner). Westbank. Fairview.

Aulocara elliotti (Thomas). Westbank. Fairview.

Chorthippus curtipennis (Harris). Penticton. Vernon.

Oedipodinæ

Arphia pseudonietana . (Thomas). Salmon Arm. Vernon. Penticton. Fairview.

Camnula pellucida (Scudder). Celesta. Salmon Arm. Vernon. Westbank. Penticton. Fairview. Bridesville.

Hippiscus neglectus (Thomas). Westbank. Penticton. Keremeos. Fairview.

Hippiscus obscurus (Scudder). Westbank. Penticton. Keremeos. Fairview.

Hippiscus vitellinus (Saussure). Penticton. Fairview.

Hippiscus latefasciatus Scudder. Fairview.

Dissosteira carolina (Linnæus). Salmon Arm. Vernon. Penticton. Fairview.

Spharagemon æquale (Say). Vernon. Westbank. Penticton. Fairview.

Mestobregma sp. (probably *kiowa*). Okanagan Landing.

Mestobregma sp. Westbank. Fairview.

Conozoa wallula (Scudder). Vernon. Westbank. Penticton. Fairview.

Circotettix suffusus (Scudder). Celesta. Salmon Arm. Vernon. Westbank. Penticton. Fairview.

Circotettix lobatus Saussure. Fairview.

Trimerotropis cæruleipes (Scudder). Celesta. Salmon Arm. Vernon. Penticton. Fairview.

Trimerotropis vinculata (Scudder). Salmon Arm. Penticton. Fairview.

Locustinæ (Acridiinæ)

Melanoplus atlanis (Riley). Celesta. Salmon Arm. Vernon. Westbank. Penticton. Fairview.

Melanoplus femur-rubrum (DeGeer). Celesta. Salmon Arm. Vernon. Westbank. Penticton. Fairview.

Melanoplus packardii (Scudder). Fairview.

Melanoplus bivittatus (Say). Salmon Arm. Vernon. Penticton. Fairview.

Melanoplus cinereus (Scudder). Fairview.

ACRYDIINAE.

Two species of the sub-family Acrydiinae were taken during the summer of 1919. Both belong to the Genus *Acrydium.*

Acrydium granulatum Kirby. Large numbers of adults of these insects were taken on April 12th in the meadows at Penticton. During April and May they were common everywhere in damp meadows around Penticton. A few were again taken during the latter part of August. No records of their breeding habits were obtained. The specimens varied greatly in coloration and markings, and all examined were macropterous.

Acrydium ornatum Say. A single male adult of this species was taken on August 7th at Fairview.

ACRIDINAE.

In this sub-family nine species were collected belonging to eight genera.

Pseudopomala brachyptera (Scudder). Two immature insects of this species were taken at Vaseaux Lake, between Penticton and Fairview, on June 14th. No mature specimens were taken this summer.

Akentetus unicolor (McNeill). On June 27th, at Fairview, adults of this species were first seen, and at this date considerable numbers were present on the dry bunch-grass ranges. The nymphs had been observed since the middle of May. By the end of July all were adult and they were found scat'tered about all over the dry ranges south of Fairview, to the U.S. Boundary Line. A few adults could still be found at the end of August. No observations were obtained as to their breeding habits. These grasshoppers are very active and can jump long distances.

Orphulella pelidna (Burin). These grasshoppers were first taken near Fairview on August 7th (1919) and were found during August fairly commonly near the edges of ponds, and along the banks of the Okanagan River. They were only seen where the grass was still green and were never observed out on the dry ranges. They vary very much in colour, from a dark brown to a bright apple green. They are strong jumpers but do not use their wings much. This is the first time that this insect has been recorded from British Columbia.

Chloealtis abdominalis (Thomas). This species was found in bushy pasture land among dry grass tufts and in burnt-off bush land at Salmon Arm on September 29th. The males were heard stridulating and by approaching them carefully a few were secured.

Only one female was found; it was brachypterous and considerably larger than the males, it was very sluggish and made no attempt to escape but its coloration made it very hard to see among the grass tufts. When the males were at last spotted after a careful stalk they were by no means easy to capture, as they would take one or two big jumps and then burrow down among the leaves and rubbish on the ground, their colour harmonizing closely with their surroundings. When stridulating the males usually crawled up on to a log or stone. These grasshoppers were found again at Vernon on October 4th, on light bush land. The males were stridulating and one or two were secured but I could not find any females. The eggs of this species are laid in rotten logs, fence-posts, etc.

Chloealtis conspersa Harris. One male of this species was taken on September 29th at Salmon Arm while collecting *Chloealtis obdominalis.* These two species are very similar, but *C. conspersa* can be distinguished by having the entire sides of the pronotum and first few segments of the abdomen black, and the lower surface of the last few abdominal segments orange-red.

Stirapleura decussata (Scudder). This species was first observed at Penticton on April 26th on a sheltered stony tract of land from which the snow had gone off early. They were present in considerable numbers but were not very active at this date, not having been out of hibernation very long. A few of them were still in the nymph stage but by far the greater number were adult. As the spring had only opened a short while before and snow was still present on the higher hills, it would have been quite impossible for these to have hatched from eggs this spring and to have grown to adult in this short time. They must, therefore, have hibernated as adults and large nymphs. On May 4th this species was found commonly scattered over the dry range country in the neighborhood of Fairview in the Lower Okanagan Valley. They were most plentiful on stony ground and sage-brush land, although some were seen on the open bunch-grass plains. They were now fully active and the males could be heard stridulating while at rest upon the ground. When disturbed they would hop away but would not readily take wing. They are silent when in flight. On May 19th this species was found to be egg-laying and from the middle of May to the middle of June oviposition was at its height. From this date on, however, they decreased rapidly in numbers and by the end of June no specimens could be found. I do not know when these eggs hatch, and all that I am able to say about their further life history is that up to September 1st, when my observations ended, no specimens of this species were taken. I think, however, that they would soon have appeared as adults again as another species (*Hippiscus neglectus*) with a similar life history was just appearing again on August 28th.

Ageneotettix scudderi (Bruner). This species was first taken on July 20th at Westbank, and on July 23rd they were found to be fairly common on the dry range land around Fairview. They were very similar in habits and distribution to *Aulocara elliotti* and seemed to take their place, for as *Aulocara elliotti* decreased *Ageneotettix scudderi* increased. Both these species when at their height were the most abundant grasshoppers present on the ranges. Although a small species they were easily seen on the ground on account of their white antennae and bright red hind tibiae. They are an active species with great jumping powers. Toward the end of August they began to decrease and were not so frequently taken, and I think that they had deposited their eggs by this time.

Aulocara elliotti (Thomas). This species at the end of June was the most plentiful grasshopper on the dry range country of the Southern Okanagan Valley. I do not know when this species first appears as adults but I should judge that it would be during the second week in June. By the middle of July adults were very plentiful and were evenly distributed over the range country south of Penticton. It was seen egg-laying in the third week in July from which date it decreased in numbers, its place being taken by a very similar but smaller grasshopper *Ageneotettix scudderi*. *Aulocara elliotti* is a powerful jumper but does not make much use of its wings. A few adults could still be found up to the end of August. The females are very much larger than the males and varied considerably in coloration, some having the white markings on the pronotum very distinct, while in others these markings were hardly visible. The males appeared to be far more numerous than the females and were very active, running on the ground with considerable speed. On several occasions from three to five males were observed following a female. In each case the female was hopping while the males were running rapidly behind.

Chorthippus curtipennis (Harris). Adults of these grasshoppers were collected in considerable numbers on September 1st in a damp meadow at Penticton where the grass was long and green. The males could be heard stridulating. I do not know when this species first appears as adult.

OEDIPODINAE.

In the Oedipodinae fifteen species were collected belonging to ten genera.

Arphia pseudonietana (Thomas). The first adults of these grasshoppers were seen on July 18th at Penticton. It has practically the same distribution in the Okanagan Valley as *Dissosteira carolina* and appears at about the same date. It is rather more common and more evenly distributed over all types of land than is *D. carolina*, which remains together in small flocks on certain dry hill sides, railroad tracks, etc. The disk of the wing in *A. pseudonietana* is dark red. The general body colours do not vary much. The usual colour is dark blackish brown with black speckles; the female being larger and lighter in colour. Some specimens are found with a chalky-white pronotum and two or three white bands across the top of the hind femora. This grasshopper flies with a rather slow zigzag flight and can produce, at will, a slow rattling noise when on the wing. Egg-laying is commenced in the last week in August.

Camnula pellucida (Scudder). This species is probably the most destructive grasshopper that we have in British Columbia and has at various times caused very great loss to stockmen and farmers by increasing in enormous numbers and completely destroying crops and range grasses. This year it has been singularly scarce in the Okanagan Valley although it was plentiful in northern Washington State, crossing the British Columbia Boundary Line into the Bridesville-Rockcreek section where it did considerable damage. The first adults were seen at Fairview on June 12th when small swarms were observed in damp places near the Okanagan River where the vegetation was still green. Mating took place during the middle of August and eggs were being laid during the last week in August and doubtless continued until killing frosts occured in the fall.

Hippiscus neglectus (Thomas). The first specimen of this species was found at Penticton on April 4th when the ground was still frozen in many places, and snow was still present in the bush. This specimen was a nymph and was nearly full grown. On April 26th they were found commonly at Penticton and nearly all were adult. On May 4th at Fairview adults were plentiful. These grasshoppers were found in company with *Stirapleura decussata* and *Hippiscus obscurus* and in similar locations, i.e. stony flats and sage-brush lands and a few were seen out on the open bunch-grass plains of the Okanagan Valley. They are not very active and were never observed to stridulate. On May 19th females were seen with their bodies distended with eggs, and they were observed ovipositing in late June. These grasshoppers vary much in coloration and size and are similar to *H. obscurus* differing from this species by the presence of a distinct tegminal stripe. There are two colour varieties, the first having the disk of the wing red and the hind tibiae yellow, and the other the disk of the wing yellow and the hind tibiae red. From my observations this year it appears that the first variety, with red wings, appears first, preceding the yellow-winged variety by several weeks and is also the first to disappear, and this peculiarity seems to be the case with *H. obscurus* also. Adults resulting from the eggs laid in late May and June were beginning to appear during the last week in August and possibly some eggs may be laid in the Fall but the majority of the adults and nymphs seen in the Fall evidently hibernate and reappear in the spring.

Hippiscus obscurus (Scudder). These grasshoppers appear to have exactly the same life history as *Hippiscus neglectus* and only differ from them in the absence of the tegminal stripe. They have the two colour varieties, with the red wings and yellow hind tibiae, which, as before, are the first to appear: and those with yellow wings and red hind tibiae, which are later in appearing. They were found with *Hippiscus neglectus* and *Stirapleura decussata* at Penticton and Fairview in the spring, and freshly emerged specimens were seen again during the last week in August. I believe that this grasshopper is, by some writers, considered to be a variety of *H. neglectus* and not a distinct species.

Hippiscus vitellinus (Saussure). This grasshopper is very similar to *Hippiscus obscurus* but differs from it by having regularly distributed blotches on the tegmina instead of dark areas tending to form bands. A few were taken at Penticton and Fairview while collecting *H. neglectus* and *H. obscurus.*

Hippiscus latefasciatus (Scudder). Only two adults of this species were seen and both were females. The first was taken on May 4th and the second on May 18th at Fairview. The body of the female taken on May 18th was distended with eggs. Consequently I think that this is another species which hibernates, lays its eggs during May and June, and then reappears in September and October, but further observations are required to determine this. The only other locality where this species has been recorded in British Columbia to my knowledge is from Lillooet, where it was taken by Mr. R. C. Treherne.

Dissosteira carolina (Linnæus). This grasshopper is common along road sides and hard dry places throughout the Okanagan Valley. The first adults were seen at Westbank on July 20th and by the middle of August these grasshoppers were common everywhere. They are very variable in size and colour; some males can be found which measure very little more than an inch in length, while some females measure more than two inches. The general body colour ranges from a pale straw to nearly black passing through various shades of rusty-red and brown. This species is a great lover of dusty roads and may be found in the centre of large towns. By the end of August they were egg-laying. Several were seen in Penticton ovipositing in the earth between the boards of the side-walks. The males of this species have a rather curious "song" during mating time; they jump up into the air until about three feet from the ground and there remain hovering like a hawk in the same spot their wings making a soft rustling sound. After remaining in this position for about half a minute they flutter down to the ground again. There is no dancing up and down and no clicking sounds produced as in the genus *Trimerotropis* or *Circotettix.* This species is found until killed by the frost.

Spharagemon aequale (Say). Adults of this species were seen first at Westbank on July 20th where they were present on the dry range land in considerable numbers. They are active insects often flying long distances before alighting again. When disturbed they fly away in a straight line keeping close to the ground and turning suddenly to one side immediately before alighting, run along the ground for several feet before remaining quiet. This species was frequently seen attacked by a Sarcophagid fly while in flight. During August they were common everywhere on the range lands of the Okanagan Valley and were usually associated with *Trimerotropis vinculata* which they closely resemble. They were seen ovipositing during the latter part of August. A few adults could still be found on the ranges at Vernon on September 15th. The adults of this species were never found together in large numbers but were evenly distributed all over the bunch-grass benches in the valleys and also on some of the higher ranges. There was one very marked variety of this species which was fairly often seen in which the light and dark bands on the tegmina were very clearly defined and the posterior half of the pronotum was white, causing the insect to show up quite conspicuously when resting upon the ground.

Mestobregma (probably *kiowa*). A large number of these grasshoppers were seen on a dry gravelly piece of land adjoining the shore at the north end of the Okanagan Lake, at Okanagan Landing, on September 8th, 1918. I have not taken this species since and they could not be found this year (1919) on the gravelly patch at Okanagan Landing where they were common last year although I searched for them on the same date.

Mestobregma sp. This is an extremely pretty grasshopper when alive; pinned specimens soon lose their colours. Adults of this species were first taken at Fairview on June 27th. During July a few were seen at Westbank and an occasional adult was taken in the neighborhood of Fairview up until the end of August. This species was never found in any numbers, but one or two might be found in a day. They were taken out on the dry bunch-grass flats and were very inactive, often allowing themselves to be caught by hand. No notes were obtained as to their egg-laying habits nor were they ever observed to produce any sound.

Conozoa wallula (Scudder). This was a very common species in certain localities and on certain types of soil. Adults were first observed in large numbers at Westbank on July 20th on a piece of flat sandy ground running out into the Okanagan Lake. This species was seen in many places in the Okanagan Valley, but when observed was always on dry, hot, sandy spots, such as roadsides, waggon tracks across the ranges, on pieces of sandy land in the bend of rivers, or along lake shores. Where they occurred they were usually in large numbers. Although they were all adult by the end of July I noticed no decrease in their numbers at the end of August and I think that they would probably be present until killed by frost. They were very inconspicuous on the ground and very difficult to catch as they were very quick in leaving the ground. When disturbed they only flew a short way before alighting again. The sexes were pairing during the middle of August. This species seemed to be particularly infested by the red mite *Trombidium locustarum,* and I saw some specimens whose under wings were so covered by these mites that they were unable to fly or even to close their tegmina. There were usually some Tachinids and Sarcophagids flying about among these swarms of grasshoppers. The Sarcophagids were observed to dart at the grasshoppers, while they were in flight, as if to place an egg or living larva upon the bodies of the grasshoppers before they closed their wings on alighting. This same thing was noticed in the case of *Spharagemon aequale* and *Trimerotropis vinculata.*

Circotettix suffusus (Scudder). Adults of this species were first collected at Westbank on July 20th where they were commonly seen along the roads. I do not know when this species first appears but I do not think that those collected on this date had been in the adult state long. I did not see many of these grasshoppers this summer in the Southern Okanagan Valley. This is one of the dominant species at Salmon Arm during August and September and may be found commonly in the orchards and along the roads. On September 29th I found large numbers of them in the orchards in company with *Trimerotropis caeruleipes.* They were depositing eggs in the hard ground around the apple trees and nearly all were in good condition, so that in this locality at any rate, they are one of the chief species present during September. This grasshopper is a strong flier and hard to capture. When approached they leave the ground very rapidly, rising to five or six feet in the air and then zigzag away making a very loud and sharp clicking noise.

Circotettix lobatus (Saussure). These grasshoppers were only taken in one or two localities. They were found in considerable numbers on August 7th near Fairview on a rock slide at the foot of a cliff. The males produce a loud crackling and snapping sound when on the wing. They have a regular "song" at mating time; dancing up and down in the air, producing five or six sharp clicks followed by a shrill rattling sound, very similar to the noise made by a rattle-snake. As these grasshoppers seem to occur almost entirely on rocky slopes at the base of cliffs, which is a favorite haunt of the rattle-snake, I have often found that people mistake their "song" for a rattle-snake which is common in that locality. This species often flies high up on the rocks and rests on the perpendicular face of the cliff and is very hard to capture, its colours harmonizing with the green and grey of the rocks. I do not know where they deposit their eggs.

Trimerotropis caeruleipes (Scudder). This grasshopper does not seem to be at all common in the Okanagan Valley, more especially in the southern half, but is one of the commonest species at Salmon Arm and at more northerly points. It was first taken in the adult form on July 20th at Westbank and a few were collected at Fairview and Penticton during the latter part of August. The only place where this species was seen in any numbers was at Salmon Arm on September 28th. On this date is was seen in large numbers in the orchards and appeared to be at its maximum abundance. They were observed to be pairing and a few were egg-laying. They were found in company with *Trimerotropis vinculata, Circotettix suffusus,* and *Arphia pseudonietana.* The males of this species are much smaller than the females and produce a soft clicking sound when in flight. Frosts of thirteen and ten degrees on September 27th and 28th respectively, caused no visible decrease in the numbers of this species.

Trimerotropis vinculata (Scudder). Adults were first taken at Westbank on July 20th, and from that date on were found in company with *Spharagemon aequale* all over the ranges at Fairview. A few adults were taken at Salmon Arm on September 29th, and had, I think, completed their egg-laying.

LOCUSTINAE.

Five species of Locustinae were collected. All belong to the genus *Melanoplus.*

Melanoplus atlanis (Riley). This year there have been remarkably few of any of the genus *Melanoplus* present in British Columbia in the localities where they are usually common. In the southern Okanagan Valley there were very few grasshoppers of this species present. The only place in B.C. to my knowledge, where this species was common was at Celesta on the Shuswap Lake where an outbreak of considerable severity occured. Both this species and *Melanoplus femur-rubrum* have been far more plentiful this year in the humid sections of the Province than they have in the Dry Belt where they are usually most in evidence. They began to hatch about the middle of June, the first of them becoming adult in the latter part of July. Nymphs of this species were still to be found in the beginning of September. Eggs were being deposited during September.

Melanoplus femur-rubrum (DeGeer). These grasshoppers have been fairly numerous this year throughout the Province and I have seen more of this species than I have of *Melanoplus atlanis* which is usually the more abundant species of the two in British Columbia. This grasshopper began hatching about the middle of June and the first adults were taken on July 20th at Westbank. The hatching period of these grasshoppers seems to be very protracted, for nymphs were still found on September 21st in considerable numbers at Vernon. This species was responsible for the outbreak in the Lower Fraser Valley this year. Eggs were being laid during the first week in September and doubtless continued until the frost killed the adults.

Melanoplus packardii (Scudder). This species was only taken on one or two occasions in the Okanagan Valley close to Fairview. It was first seen in a dry gully on June 27th, on which date only a few were adult. On August 22nd this gully was again visited and a considerable number of specimens caught and all were adult. Oviposition began in the third week in August. An odd specimen was found here and there on the open ranges but it was nowhere very plentiful and not more than fifty specimens were seen during the entire summer. The specimens collected belonged to the form *rufipes* (Cockerell).

Melanoplus bivittatus (Say). This grasshopper was not seen very often this year and did not seem to be nearly as common as usual. The first adult taken was at Fairview on June 27th, but from this date until the middle of August no adults were seen. During the last week in August and in the first week in September a considerable number of females were taken while depositing eggs in the earth betwen the planks of the side-walks at Penticton. At the end of September ragged adults could still be found at Vernon and some eggs were still being deposited.

Melanoplus cinereus (Scudder). Adults of this species were first collected at Fairview on August 7th, and were found during August very occasionally in this locality. They are very pale in colour and have bright blue hind tibiae when alive. Only one male of this species was taken and ten females. They were all taken among sage-brush and *Chrysothamnus* bushes. When disturbed they jumped for great distances and using their wings would usually land in one of these bushes, thus making it very difficult to capture them. Several were found by shaking the *Chrysothamnus* bushes in which they seemed to spend a good deal of their time. They were observed to feed on the leaves of the *Chrysothamnus*. Several large nymphs of this species were seen on August 23rd. This is the first record of this species from Canada.

ONE YEAR'S EXPERIMENTS IN THE CONTROL OF THE CABBAGE MAGGOT.

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Experiments in the control of the cabbage maggot (*Phorbia brassicae* Bouche) were initiated in a small way at Truro in 1917, as a joint project to be carried on co-operatively by the Horticultural and Entomological Departments of the Agricultural College. In 1918 these experiments were continued on a larger scale and the 1919 experiments have grown out of the work of the previous two years, of which they are simply the continuation. Since the records for 1919 reveal nothing inconsistent with the results of the previous seasons, it has been considered sufficient, for the purpose of this paper, to confine our attention entirely to the former. None of the results herein outlined should be considered as final, but we believe that they indicate promising lines for further research, and they form the basis for another season's work. While the utmost care was taken to make the records as accurate as possible and to eliminate possible sources of error, our findings will all be checked up in subsequent seasons before definite recommendations based on our own experiments can be made.

CONTROL INVESTIGATIONS, 1919.

The plots in which the different control experiments were conducted in 1919 were divided into three main series. The first series designated "continuation plots," included trials of those materials found to be of promise in previous years, either in our own experiments or in those of other workers. The second series which were called "field plots," included the three treatments which previous results showed to be most promising, these being applied to later cabbage on a field scale. The last series known as "trial plots" includes methods or material not previously tested by us.

In addition to these there were a number of small miscellaneous experiments conducted with a view to determining the exact method of action of some of the chief materials used.

I. Continuation Plots.

These plots were situated on a piece of ground 275 ft. long by 30 ft. wide. The plants were set out in rows 2 ft. apart and 18 inches apart in the rows, there being 12 rows each containing 240 cabbages of the Early Jersey Wakefield variety. With the exception of tar paper discs and wire screens, 2 applications of each treatment were made, the first on May 21st, the day the adult flies first made their appearance, and again on May 31st.

The different plots were arranged in triplicate and each section removed as far as possible from the corresponding one, to make more certain of securing a uniform infestation. The table lists the different treatments and gives the results obtained from each. The figures given are representative of costs at Truro during the past season and would doubtless vary materially in different localities and in different seasons. Since, however, they indicate the actual set of conditions encountered by us in growing the crop and treating it for the maggot, they are here given. The figure showing cost of production of an acre of cabbage was worked out and furnished us by Mr. James Dickson of the Horticultural Department of the College.

In the following table showing the results of the different treatments the weight of the heads is taken as the main basis for comparison for several reasons, the most important being that, under our conditions of marketing, sales are made by weight. Consequently, it is simplest to make our calculations on that basis. More important is the fact that this is the only really *quantitative* way to record results. Simply to give the number or percentage destroyed is insufficient, since many cabbages may be dwarfed or retarded, though not actually destroyed or rendered unmarketable. It would be impossible to record the number dwarfed as a result of the work of the maggot or to indicate in any way the degree of dwarfing, since there is no method of determining from the appearance of the plants just where it begins or ends. On the other hand, the total weight from each plot indicates this in a very exact manner. It also brings out the fact that certain treatments increase the weight of heads produced, irrespective of their insecticidal value. The weight, therefore, is the best method of expressing results of the different treatments. The actual price obtained for the cabbage from each plot has been recorded, since this is the point that most interests the commercial grower and is the ultimate test of the practicability of any treatment. The average price per pound is also an important item, for certain treatments retard and others accelerate the developments of the head. Those that hasten the heading up process result in a higher price per pound, as the earliest cabbage brings the highest price.

It will be seen that the tar paper discs from which the earth was removed after the first two cultivations, gave the only absolutely perfect stand outside of the wire screens. In weight of heads, in price per pound and in total net profit per acre, this plot is greatly inferior to the one receiving corrosive sublimate 1—1,000, though this plot lost a single plant. Curiously enough double the strength of corrosive sublimate did not increase the efficiency of the material, but rather appeared to reduce it. Either directly or indirectly the use of this material seemed to bring about a great increase in the weight of heads produced.

TABLE I.—CABBAGE MAGGOT CONTROL EXPERIMENTS—CONTINUATION PLOTS, 1919.

Plot No.	Treatment.	No. Plants destroyed.	Per cent. destroyed.	Weight of Cabbages per plot at harvesting.	Average weight of head.	Calculated No. of lbs. per acre.	Average price per lb.	Price received.	Calculated price per acre.	Cost of Treatment per acre.	Net Profit* per acre.
				lbs. ozs.			c.	$ c.	$ c.	$ c.	$ c.
1	Wire screens			394 8	1.6	22,989.49	4.38	17 30	1,009 17	265 81	568 96
2	Tar paper discs	55	22.9	409 12	2.2	23,878.18	4.39	18 00	1,050 00	42 00	833 60
3	Scotch soot	75	31.25	326 12	2.0	190,413.56	4.37	14 28	833 00	80 90	577 70
4	Check	183	76.25	139 8	2.4	8,041.95	4.69	6 54	381 50	Check	207 10
5	Tobacco dust .. Washing soda .. Filler } equal parts	67	27.9	384 8	2.2	22,406.74	4.26	16 37	957 92	48 80	731 72
6	Tobacco dust .. Soap powder... Filler } equal parts	53	22.1	378 0	2.0	22,027.95	4.17	15 75	918 75	48 80	695 55
7	Tobacco dust .. Scotch soot.... Soap powder... } equal parts	18	7.5	537 0	2.4	31,293.68	4.22	22 65	1,321 25	63 42	1,083 43
8	Tobacco dust... Sulphur } equal parts	60	25	275 4	1.5	16,040.19	5.58	15 29	891 92	58 44	759 08
9	Corrosive sublimate (1-1,000)	1	0.4	638 12	3.0	37,223.16	4.26	27 17	1,584 92	45 82	1,464 70
10	Corrosive sublimate (2-1,000)	3	1.25	587 4	2.5	34,221.99	4.17	24 48	1,428 00	73 54	1,180 06
11	Tar paper discs. Kept free of soil			503 8	2.0	29,341.46	4.19	21 01	1,225 58	53 20	997 98
12	Tobacco dust and lime } equal parts	69	28.75	305 8	1.7	17,803.04	3.99	12 19	711 08	39 90	496 78

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* Cost of raising plants, setting in field, cultivating, cutting and packing, etc., $174.40.

The foregoing treatments are so greatly superior to any of the others that the latter may be disposed of in a few words. The tobacco dust, soap powder and soot mixture is worthy of note as coming next in efficiency to the foregoing and giving a heavy average weight of head. The tar paper discs from which the soil was not removed, were markedly inferior to those where this was done. The screens, while giving perfect control, are too costly and their application too laborious ever to come into general use, and in addition, they seem to have a bad effect upon the plants. The tobacco dust and lime, while inferior to the foregoing in maggot control gave, nevertheless, greatly superior results to those of last season. This is doubtless due to the fact that the material was put on fresh when the flies first appeared and then renewed ten days later. The previous season the material was applied several days before the appearance of the flies, a heavy rain intervening between that time and their appearance. The tobacco dust is apparently only effective when fresh and its usefulness is destroyed by a heavy rain. In conjunction with sulphur, washing soda or soap powder, is apparently more effective than with lime.

It is interesting to note that practically all the substances used in our continuation plots were mentioned by Slingerland in his bulletin on this insect (Bul. 78, Cornell Univ. Agr. Expt. Sta., 1894), though he did not consider them in all the combinations used by us. Among the effective methods he lists screens and tar paper discs; among the ineffective, soot, sulphur and tobacco dust. The two former he did not test himself, but he did some experiments with the latter, which did not turn out entirely satisfactory. The material was applied twice, the first time immediately after planting, the second ten days later. He does not state whether the flies were out at the time of the first application, but says that they were abundant at the time of the second. As a result of the experiments nearly one-half of the treated plants were salable, while only 90 marketable heads were secured out of 600 of the untreated plants.

Particularly interesting is his mention of corrosive sublimate in view of the success that has lately attended the use of this chemical. On this account we reproduce his remarks in full:

"An editorial in 1864 (*Country Gentleman,* p. 65) states that a contemporary recommends 1 oz. of the substance dissolved in 4 gals. of water. A correspondent of a Canadian Journal (*American Cultivator* for April 30, 1881) says all of the London market gardeners secretly use a solution of $\frac{1}{4}$ oz. of this substance in 4 gals. of water for these maggots. He has used the solution quite extensively, using enough to saturate the ground. But it is not clear from the account whether it is applied as a preventive or whether it kills the maggots. We have little faith in its effectiveness but it should be further tested."

The foregoing shows that this material was in use many years ago and it seems strange that it never seems to have made headway until recently. The reason for this may have been that the average person takes no notice of the infestation until the plants begin to wilt, when the maggots are well grown and it is too late to apply control measures. All our experiments indicate that to control the maggot a material must be either a repellent, in which case it should be applied at planting or before the flies appear or, it should be one that will destroy the eggs of very young larvæ, a fact that has often been lost sight of in studies of this pest. If the cabbage can be protected for even two weeks after setting out, our experiments indicate that it stands a very good chance of surviving the attacks of the maggot.

II. FIELD PLOTS.

Field tests were conducted on 3,200 cabbages (Danish Round-head). These were the treatments showing most promise in the previous years' experiments. The plants were set out on July 19th during the emergence of the 2nd brood flies and while oviposition was actively proceeding. There was some infestation of the plants in the seed bed, which was mostly, but probably not entirely, removed by carefully washing the roots in water. Two applications at intervals of one week were made in the case of corrosive sublimate. One application of the dust was made and the earth was not removed from the discs after cultivation.

FIELD TESTE ON LATE CABBAGES (3.200 PLANTS).

Plot No.	Materials used.	No. of Plants.	No. destroyed by maggot.	No. with marketable heads.	Per cent. destroyed by maggot.	Per cent. with marketable heads.
1	Tar paper discs	800	42	758	5.25	94.75
2	Tobacco dust, soap powder and soot .... (equal parts.)	800	104	696	13.0	87.0
3	Corrosive sublimate .... (1-1,000.)	800	11	789	1.375	98.625
Check	....	800	350	450	43.75	56.25

FIELD TESTS ON LATE CAULIFLOWER (280 PLANTS).

Plot No.	Materials used.	No. of Plants.	No. destroyed by maggot.	No. with marketable heads.	Per cent. destroyed by maggot.	Per cent. with marketable heads.
1	Tar paper discs	70	5	65	7.14	92.86
2	Tobacco dust and sulphur . ... (equal parts.)	70	15	55	21.42	78.58
3	Corrosive sublimate .... (1-1,000.)	70	4	66	5.71	94.29
Check	....	70	16	54	22.86	77.14

The accompanying table shows the treatments given and the results. It will be seen that the corrosive sublimate is again superior to the other treatments, the control being almost perfect. While the other two treatments were hardly given a fair chance in comparison with the corrosive sublimate, the lesser cost of the latter and the prospect of still greater reduction in the price of the material, places it definitely ahead as a method of control of the cabbage maggot.

A similar experiment was carried out on a small adjoining block of cauliflowers, using sulphur in conjunction with the tobacco dust, instead of Scotch soot and soap powder. The results, as will be seen from the table, are comparable.

It was originally intended to make further tests using the main crop of late cabbage, but this was not done as our investigations brought to light the fact that July planted cabbage suffer very little from the attacks of the maggot.

CABBAGE MAGGOT CONTROL EXPERIMENTS TRIAL PLOTS, 1919.

Plot No.	Treatment.	No. Plants destroyed.	Per cent. destroyed.	Weight of Cabbages per plot at harvesting.	Average weight of head.	Calculated No. of lbs. per acre.	Average price per lb.	Price received.	Calculated price per acre.	Cost of Treatment per acre.	Net Profit per acre.
				lbs. ozs.			c.	$ c.	$ c.	$ c.	$ c.
A	Once transplanted stock	66	33	303 12	2.3	21 262.5	2.65	8 05	563 50	Check	389 10
B	Double dosage nitrate of soda	66	33	383 8	2.8	26,845	2.94	11 31	791 70	..	617 30
C	Planted from seed *	35	17.5	....	....	....	....	....	....	..	....
D	Twice transplanted stock	88	44	344 0	3.0	24,080	4.47	11 96	837 20	..	662 80
1	Creosote, 1% Clay, 99%	2	1	712 0	3.5	49,840	3.73	26 61	1,862 70	26 08	1,662 22
2	Dry lime sulphur, 20% Clay, 80%	93	46.5	232 8	2.2	16,275	2.89	6 74	471 80	49 12	248 28
3	Dry lime sulphur, 20% Tobacco dust, 40% Clay, 40%	21	10.5	409 12	2.3	28,682.5	3.35	13 75	962 50	78 16	711 94
4	Anthracene oil, 1% Clay, 99%	3	1.5	574 0	2.9	40,180	3.57	20 50	1,435 00	27 20	1,223 40
5	Tobacco dust, 40% White arsenic, 5% Clay, 55%	4	2	550 8	2.8	38,535	3.73	20 55	1,438 50	52 62	1,211 48
6	Dry lime sulphur, 20% Arsenate of soda, 7% Clay, 73%	137	68.5	134 12	2.1	9,432.5	3.41	4 60	322 00	77 94	69 66
7	Tobacco dust, 40% Corrosive sublimate, 1% Clay, 59%	1	0.5	643 4	3.2	45,027.5	3.74	21 11	1,687 70	78 16	1,425 14
8	Nicotine sulphate, 2% Clay, 98%	25	12.5	430 8	2.5	30,135	3.05	15 09	1,056 30	53 44	828 46
9	Free nicotine (40% solution), 2% Sulphur, 98%	51	25.5	499 4	3.4	34,947.5	3.76	18 77	1,313 90	53 30	1,129 40
10	Salt solution (50% saturated)	48	24	416 4	2.7	29,137.5	3.41	14 22	995 40	61 30	760 10
11	White arsenic, 5% Clay, 95%	68	34	322 4	2-4	22,557.5	2.92	9 44	660 80	33 58	452 82
12	Para-dichlorobenzene, 10% Clay, 90%	12	6	560 8	3.0	29,235	3.67	20 59	1,441 39	52 56	1,214 90
13	Para-dichlorobenzene, 10% Scotch soot, 90%	6	3	650 12	3-4	45,552.5	3.86	25 16	1,761 20	105 90	1,480 90

Cost of raising plants, setting in field, cultivating, cutting, packing, etc., $174.40.

* Complete records not available from this plot.

TRIAL PLOTS, 1919.

For trial of treatments not previously tested in our experiments, we had at our disposal a section of land 170 ft. wide by 60 ft. long. With the rows of cabbage 2 ft. apart, there was thus space for 85 rows of cabbage, and with the plants 18 inches apart in the rows, 40 plants for each row. With seventeen different treatments including checks, this gave us 200 plants (Copenhagen Market) for each plot. Instead of having all the 200 plants for each plot together, however, we divided the piece into five sections, one row i.e., 40 plants in each section being devoted to each of the different treatments. We thus had on this piece of ground five repeatings of each treatment, this method tending to equalize variations in intensity of maggot infestation and any in equalities of the soil that might affect the final weight of heads from each plot.

It will be seen that there are four check plots, each receiving a different horticultural treatment, but none protected from the maggot. All the other treatments with the exception of the salt solution were in the form of dry powder and were applied at the rate of 700 lbs. per acre. In the case of the salt, a saturated solution was first made and this then diluted with an equal quantity of water.

Three of the sections were planted May 31st, the remaining two, June 2nd. An exception to this were the plants on Check Plot D, which were planted a week earlier than the others. It was intended to plant them all on the same date, but conditions arose which made this impossible. Normal applications of nitrate of soda, i.e., 250 lbs. per acre, applied in two equal sowings on June 11th and June 28th were made. On Check B, an extra application was applied on July 12th, this plot receiving a total amount equal to an application of 500 lbs. per acre. All the treated plots received two applications of the material used, the first at planting, the second on June 13th. The first brood flies were actively ovipositing at the time of planting.

DISCUSSION OF RESULTS.

Had it been possible to set out these plots two weeks earlier, it would naturally have been a more severe test of the different materials, since they would have been exposed for a longer period during the height of the oviposition period. At the same time the number lost in the check rows enables us to make sufficiently striking comparisons.

A consideration of the results from the check plots shows that " A " and " B " are equal as regards the number of plants killed, but the acceleration of the heading process and the greater weight of head, owing to the extra application of nitrate, have given us a much larger price per acre in the case of " B." Obviously, the results of this treatment would depend upon the chemical requirements of the soil. Plot " C " shows a lower rate of infestation, due doubtless to the fact that it escaped the period of most active oviposition. It also missed the high prices obtained for the early crop. Check Plot " D " having been planted earlier than the others, cannot, unfortunately, be compared with them on an equal basis. Exposed during a longer period of active oviposition, more plants succumbed than in the other check plot. Had conditions been different it is not likely that this would have occurred. As it is, the greater average weight of the heads which survived and the earlier heading up of the plants, gives us the largest financial returns of any of the check plots.

It is obvious that some of the treatments are entirely inadequate to control the maggot. A few show a decided advantage over the check plots, but not sufficient to make them worthy of further trial, in view of the very much better results obtained by other materials. In this class may be mentioned nicotine sulphate and clay, nicotine and sulphur, para-dichlorobenzene alone, and salt solution in the strength tested. Others actually appear to have weakened the plants to such an extent that a greater number succumbed to the attacks of the maggot than on the check rows. These include dry lime sulphur, white arsenic, arsenate of soda and combinations of these compounds. No further discussion is necessary regarding these two classes, all the required facts being found in the table.

A consideration of the other treatments shows that Plot VII, (the tobacco dust, corrosive sublimate and clay mixture) gave the smallest number of plants actually destroyed, but Plot I (creosote) is a close second with only one more casualty and with the largest tonnage per acre of any plot, lower cost of treatment and greater profit per acre. Plot IV (anthracene oil) is only slightly behind the foregoing in number of marketable heads produced, but it also falls below Plot XIII (para-dichlorobenzene and soot) in tonnage per acre. This is probably due to another reason than maggot control as will be seen later. The treatment given to No. V (tobacco dust, white arsenic and clay) is apparently next in efficiency, but this plot also falls below No. XIII in tonnage per acre, and even No. XII (para-dichlorobenzene and clay) which lost three times as many plants, has produced a greater weight of head. No. XIII actually comes second in tonnage per acre produced, though behind the plots previously mentioned in the number of plants free from injury. The plants in this plot were noticeably benefited by the treatment, having a deeper green colour of leaf and a healthier general appearance than the other plots. The results from the foregoing treatments are considered promising and will be tested further in the "Continuation Plots" of 1920. Tested out on earliest planted cabbage, the relative merits of these materials as compared with the test in the "Continuation Plots" of 1919, should be clearly indicated.

THE CONTROL OF THE CABBAGE ROOT MAGGOT IN BRITISH COLUMBIA.

R. C. Treherne, Entomologist in Charge for British Columbia, and
M. H. Ruhmann, Assistant Provincial Entomologist.

At the request of Mr. Arthur Gibson, Chief, Division of Field Crop and Garden Insects of the Dominion Entomological Branch, the virtue of the corrosive sublimate treatment for the control of the Cabbage Root Maggot, *Phorbia brassicæ*, was tested in British Columbia during 1919, in comparison with the Tar-paper-disc method of control. At Mr. Gibson's further request the following report is submitted on the record of the experiments performed.

The Plan of Experiment.

The work was conducted altogether in the large commercial vegetable-growing district of Armstrong, B.C., where the Cabbage Root Maggot has for several years exacted a heavy toll. The "block" system of experimentation was adopted in preference to the "row" system. Twelve blocks were employed, with from

70 to 210 plants to a block. Three control untreated blocks were interspaced between the treated blocks and they, with the tar-paper blocks, only received applications of ordinary water on the same occasions as the treatments of corrosive sublimate were made. Six tar-paper-disc blocks, consisting in all of 611 plants were employed in the experiment, interspaced between the other blocks, and three corrosive sublimate blocks on which various strengths were used, at 1 oz. to 6 gallons, 1 oz. to 8 gallons and 1 oz. to 10 gallons of water. The corrosive sublimate blocks were in turn divided into three parts, which received respectively 1, 2 and 3 applications in the season. Observations were made on cabbages and cauliflowers. The following notes deal with cauliflowers in particular and, inasmuch as the cauliflower is more susceptible to injury than the cabbage, it would necessarily follow that what was shown to be the case with the cauliflower would also be so with the cabbage. Cauliflowers were transplanted on May 3rd and set in their permanent positions in the field, and tar-paper discs were placed around the plants at this time. Applications of corrosive sublimate were made on May 7th, May 15th and May 23rd; the first application requiring the use of 1 gallon of diluted mixture, the second application 1½ gallons and the third nearly 2 gallons per 100 plants. One cultivation was given the entire plantation after transplanting between May 3rd and May 23rd.

In checking results a great deal of care was exercised to determine exactly what caused the plants to die or suffer, and observations were made on the vegetative growth and development of the root system. Every plant received a separate number and each was checked weekly throughout the period of the experiment.

Results of Experiment.

The untreated blocks of cauliflowers showed considerable (76.5 per cent.) characteristic injury from maggots and stood out very clearly in the plantation. The tar-paper-disc blocks showed pronounced injury but only 25.3 per cent. of the injury caused was due to maggot attack. Fully 36 per cent. was caused by a "wilt" produced by the presence of the disc. It would be well to mention clearly at this point, that the field chosen for the experiments was a low-lying one with a large quantity of vegetable matter in the soil composition, with a tendency to remain cold for a long time in the spring months. The sun is usually very warm in the Okanagan Valley during May and this last year was no exception in this regard. Consequently with conditions such as these, on cauliflowers, the influence of heat acting on and in association with the sub-soil moisture produced a condensation of moisture beneath the disc below the soil surface. This condition was not observed in the case of the cabbages, for the reason that the growth of a cabbage is sufficiently strong to outgrow many adverse conditions. Any check in the growth of cauliflowers is serious in commercial growing, as a process known as "buttoning" takes place. This "wilt" condition was not observed in any case with the plants treated with corrosive sublimate, but some plants were injured by the proximity of fresh manure to the roots, causing the loss "from other causes" shown in the table given below. In fact after three treatments with corrosive sublimate at all three strengths the loss due to maggot attack was less than 2 per cent., and the growth of the plants in "top" and "root" was double the growth on any other block. The results clearly showed that under "bottom" land conditions, with cauliflowers, tar-paper discs were unsatisfactory and that corrosive sublimate in three treatments at 1 oz. to 8 or 10 gallons gave eminently satisfactory and safe results. With cabbages growing in the same field under same conditions as the cauliflowers the loss due to maggot attack varied in different parts of a two-acre field from 18 per cent. to 50 per cent. Where cabbages had tar-paper discs applied as was the case in one acre, the loss averaged rather less than 5 per cent. from maggot attack. This loss from maggot attack, when tar-paper discs were used in previous years, is considered by growers in the locality a fair average annual loss. Where corrosive sublimate was used on cabbages the loss by maggot attack was less than 5 per cent. and the growth of the plant while somewhat better at the commencement of the year, was not appreciably different at the time of marketing the crop. The summarized results are given herewith:

TABLE I.— Cauliflowers—Averages and Summary.

Form of Treatment.	Percentage.	
	Affected by maggots.	Affected by other causes.
Tar paper discs	25.3	36.4
Corrosive sublimate—		
1 application. 1- 6	68.6	3.9
1- 8	62.0	8.0
1-10	64.0	16.0
2 applications. 1- 6	6.0	4.0
1- 8	62.0	8.0
1-10	64.0	16.9
3 applications. 1- 6	1.8	19.2
1- 8	....	23.4
1-10	1.8	19.0
No control	76.5	21.9

Life-History Notes.

Inasmuch as all previous study given the Cabbage Root Maggot in British Columbia has taken place in the Lower Fraser Valley, this year's work in the Armstrong district adds another locality where this insect has been under observation. The transplanting of the cabbages and cauliflowers was completed by May 3rd in 1919. The first adult flies were captured on May 7th in the field, and on examination of 100 plants on this day, only 3 eggs were taken. Oviposition was heavy previous to May 23rd and on this date small larvæ were found in the root systems of some plants that were showing signs of injury. Two large half-grown maggots were seen on this day also. Twenty-five plants were under more or less continuous observation during the early spring and on the dates May 12th and 13th and June 4th, these plants carried respectively 59, 817 and 1,091 eggs, the eggs on each examination being carefully removed by hand. It was exceedingly interesting to note that the largest plants received the greatest number of eggs and in view of the fact that the corrosive sublimate blocks contained the largest plants the blocks were the greatest attraction areas. The same point is drawn on page 27 of Bulletin No. 12 of the Dominion Entomological Branch, 1916, which details, so far as the bulletin relates to British Columbia, the life-history studies carried on in the Lower Fraser Valley. The sundry other points in the life-history of this maggot in the Armstrong district are so closely allied to the results detailed in Bulletin 12 on this insect that there is no need to take up further space in this paper for their discussion.

FURTHER DATA ON THE CONTROL OF THE CABBAGE ROOT MAGGOT IN THE OTTAWA DISTRICT.

Arthur Gibson, Chief, Division of Field Crop and Garden Insects: Entomological Branch, Department of Agriculture, Ottawa.

Since the publication, in 1912, of our Bulletin on the cabbage root maggot* we have conducted a number of further experiments on the control of this insect, particularly with corrosive sublimate and tobacco dust and lime. The former has received special study during the past four years, and we consider its value to be undoubted and that it has now passed the experimental stage having been used with remarkable success under field conditions. Early references in the literature point to the fact that corrosive sublimate has been known as a remedy for the cabbage root maggot for over 50 years, and it is remarkable that its value has only been appreciated during comparatively recent years. In the years 1916 and 1917 we conducted experiments with corrosive sublimate on a small scale. In 1918, we used in one experiment 800 early cabbage plants. These plants were treated with corrosive sublimate in the strength of one ounce to four gallons of water on four occasions, namely, on May 27th, June 6th, 14th and 23rd. The results from this experiment were very striking, 96 per cent. of the plants treated with the corrosive sublimate being saved. In the same field in which the experiment was conducted the main cabbage plantation was destroyed by the root maggot to the extent of fully 60 per cent. In 1919, over 8,000 cabbage plants were placed at our disposal by Mr. J. I. Farquharson, who resides on the Aylmer Road, near Ottawa. Of this number 2,731 plants of the varieties Jersey Wakefield and Copenhagen Market were used in one experiment. This block of 2,731 cabbage plants was divided into 38 smaller blocks, of which blocks 1 to 18 inclusive, excepting blocks 2, 5, 8, 11, 14, and 17, which were left as checks, were treated with commercial corrosive sublimate mixture in the strengths of 1 oz. in 4 gallons of water, 1 oz. to 6 gallons of water, 1 oz. to 8 gallons of water, and 1 oz. to 10 gallons of water, some blocks having four treatments others only three. The plants were put out in the field on May 12th. The first application was made on the fourth day after planting, the second application six days later and one or two further applications ten days apart, about half a cupful of the mixture being poured around the base of the stem of each plant on each occasion. Each block consisted of 100 plants excepting the checks which varied from 20 to 36 plants each. Blocks 19 to 24 inclusive (100 plants each) excepting checks 20 and 22 (30 plants each) were used for felt-tarred-paper discs of various shapes. Blocks 25 to 23 inclusive (100 plants each) excepting blocks 26, 29, 32, 35, and 38 (20 plants each) were treated with tobacco dust and lime in the proportion of 1 part tobacco dust to 2 parts of lime, 1 part of tobacco dust to 3 parts of lime, and 1 part of tobacco dust to 4 parts of lime, two, three and four applications being made.

The results of this experiment are very striking. Briefly, they are as follows:

Corrosive Sublimate. There was practically no difference in the plots treated with the various strengths of corrosive sublimate. The weakest solution, namely, one ounce in ten gallons of water, gave as good results as did the strongest mixture of one ounce to four gallons of water. Three applications, too, are apparently equal to four applications. The percentage of plants destroyed by the maggot in all of these plots ranged from 0 per cent. to 4 per cent., whereas the plants in the check plots were destroyed to the extent of 52 per cent., 57 per cent., 61 per cent., 66 per cent., 70 per cent., and 80 per cent. respectively.

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*Bull, 12, Ent. Br., Dept. Agr., 1916.

Discs Used. Hexagonal disc (block 19); small square disc (block 21); large square disc (block 24); and round disc (block 23). All gave excellent protection. In blocks 19 and 24 (100 plants in each) 100 per cent. results were obtained; in block 21 of similar size 1 per cent. destruction occurred and in the fourth block (23) 2 per cent. destruction. In the two check blocks, Nos. 20 and 22 (30 plants in each) the loss from maggot was 10 per cent. and 17 per cent. respectively.

Tobacco and Lime. One part tobacco dust and 2 of lime, also in proportions 1-3 and 1-4. Block 25, 1 to 2; Block 27, 1 to 3; Block 28, 1 to 4, (100 plants in each) had 4 applications about ½ to 1 inch of the mixture being placed around the stem of each plant. Block 30, 1-2; Block 31, 1-3; Block 33, 1-4 (100 plants in each) had three applications. Block 34, 1-2 (100 plants); Block 36, 1-3; Block 37, 1-4 (150 plants in each) had two applications. The percentage of plants in these blocks destroyed was also very small, varying from 1 per cent. to 4 per cent., the latter percentage being in Blocks 36 and 37 which received two applications only of the more diluted mixtures. Three applications of the mixture was practically as effective as four applications, and the weakest mixture gave practically as good results as the strongest. Check blocks (20 plants in each) with these series, were destroyed as follows: Block 26, 25 per cent.; Block 29, 20 per cent.; Block 32, 30 per cent.; Block 35, 30 per cent.; Block 38, 30 per cent.

A larger plantation of later cabbages, 3,360 in number, planted May 21st, was used for corrosive sublimate solutions solely. The plantation was divided into 11 blocks, 8 of equal size, each consisting of 378 plants, and the remaining three, which were used as check blocks, contained respectively, 105 plants each and one 21 plants. The corrosive sublimate was used in the same strengths as in previous experiment, namely, 1 oz. to 10 gallons water=1:1,280 (Block A, 4 applications; Block B, 3 applications): 1 oz. to 8 gallons water=1:1,024 (Block D, 4 applications; Block E, 3 applications); 1 oz. to 6 gallons water=1:768 (Block G, 4 applications; Block H, 3 applications); 1 oz. to 4 gallons water=1:512 (Block J, 4 applications; Block K, 3 applications). Blocks C, F, I and L were used as checks. Blocks A, D, G and J were treated on May 27th, June 4th, June 13th, and June 24th; Blocks B, E, H and K, on the first three dates only. In this experiment the time required to treat 3,000 plants was 3½ hours, using a watering can with spout closed slightly with wooden plug. In this experiment no attempt was made to keep a definite record of every plant. The blocks were examined at frequent intervals and from a practical standpoint no injury took place in those treated with corrosive sublimate. Conspicuous injury, however, was apparent in the check plots and the plants in these latter were certainly not as thrifty as those treated.

That the cabbage maggot was abundant in the immediate area of our work in 1919 was well evidenced by the losses which took place on the farms close by. Hundreds of plants of the early varieties were completely killed.

The above experiment following those conducted by us previously, particularly in 1917 and 1918, certainly strengthens the belief that in corrosive sublimate we have a valuable control measure for the cabbage maggot.

COST OF TREATMENTS. In connection with the cost of treating cabbages per acre of plants with corrosive sublimate in comparison with cost of applying discs, it is of interest to record the following:

Corrosive sublimate.—Total cost per acre, including labor and material:	
3 treatments	$24.21
4 "	32.28
Tarred discs.—Total cost per acre, including labor and material	16.75

EFFECT OF CORROSIVE SUBLIMATE ON SOIL BACTERIA. In order to determine the numbers of bacteria in the soil in the field where our cabbage maggot control work was conducted, bacteriological soil tests were made by an assistant, Mr. J. A. Flock, working under Mr. H. T. Gussow, of (*a*) soil treated with corrosive sublimate and (*b*) untreated soil. These soil samples were taken on August 18th, when most of the crop had been harvested. Briefly, the data resulting from these experiments clearly indicated that the corrosive sublimate treatment showed no deleterious influence either upon the plants or on the relative number of soil organisms present in the treated versus the untreated soil. Under field conditions the applications of the corrosive sublimate mixtures certainly seemed to have a stimulating effect upon the growth of the plants.

In the control measures conducted in 1919, Mr. J. A. Flock and Mr. W. P. Shorey, rendered valuable help.

CABBAGE MAGGOT CONTROL.

L. CAESAR AND H. C. HUCKETT.

In neither the Guelph nor Burlington districts did cabbages or cauliflowers suffer any damage worth speaking of in 1919 from the Cabbage Maggot (*Chortophila brassicae*). Only 14 plants out of 7,000 in the plot were killed by the maggots and these 14 were not in any one row but widely distributed over the field.

Fortunately we included in our experiments a plot of radishes, and as radishes were much worse attacked than cabbage some interesting and suggestive results were obtained.

We also devoted considerable time to trying to discover how corrosive sublimate controls the insect.

The results of the work along these two lines is given below:

TABLE SHOWING THE EFFECT OF VARIOUS

Plot 1—Composed

No. of row.	Date of sowing.	Date plants appeared.	Substance used.	Dates and strength of application.	No. of sound plants.
13	May 3	May 12	Check	Check	4
17	.. 6	.. 13	Check	Check	44
18 } 19 }	.. 6	.. 13	Tobacco dust 1 part and soot 2 parts..	May 14 and 26	90
20	.. 6	,, 13	Corrosive sublimate.	May 7—1 to 640 May 26—1 to 1,000	128
21	.. 6	.. 13	Corrosive sublimate.	May 7—1 to 640 May 26—1 to 1,000	115
22	.. 6	., 13	Tobacco dust	May 14	55
23	.. 6	., 13	Tobacco dust	May 14 and 26	34
24	.. 6	.. 13	Tobacco dust	May 14 and 26, and June 10	45
25	.. 6	.. 13	Check	Check	42
26	.. 6	,. 13	Soot	May 14 and 26	11
27a	.. 6	.. 13	Salt (dry)	May 26	8
27b	,. 6	,, 13	Salt (solution)	May 26	10
28	.. 6	, 13	Corrosive sublimate.	May 7—1 to 640 May 26—1 to 1,000	75

Plot 2—Medium

No. of row.	Date of sowing.	Date plants appeared.	Substance used.	Dates and strength of application.	No. of sound plants.
32	May 26	May 30	Check	Check	121
33a	.. 26	,, 30	Corrosive sublimate.	May 31—1 to 240	44
33b	., 26	,, 30	Corrosive sublimate.	May 31—1 to 480	49
33c	.. 26	,, 30	Corrosive sublimate.	May 31—1 to 720	60
33d	.. 26	,, 30	Corrosive sublimate.	May 31—1 to 1,000	58
34	.. 26	.. 30	Soot	May 31	64
35	., 26	.. 30	Soot	May 31 and June 7	100
37	.. 26	.. 30	Ammonia	May 31, 1 to 16 of water	....

Plot 3—Late

No. of row.	Date of sowing.	Date plants appeared.	Substance used.	Dates and strength of application.	No. of sound plants.
4	July 8	July 16	Corrosive sublimate.	July 8—1 to 500	96
5	.. 8	.. 16	Corrosive sublimate.	July 16—1 to 1,000	78
6	.. 8	.. 16	Corrosive sublimate.	July 8—1 to 500 July 26—1 to 1,000	88
7	.. 8	.. 16	Check	Check	48
8	.. 8	,, 16	Corrosive sublimate.	July 8—1 to 500	96
9	.. 8	,, 16	Corrosive sublimate.	July 16—1 to 1,000	62
10	., 8	,, 16	Corrosive sublimate.	July 8—1 to 500 July 16—1 to 1,000	115
11	,. 8	., 16	Check	Check	28
12	,, 8	., 16	Tobacco dust, sulphur and arsenate of lead	July 8	24
13	.. 8	,. 16	"	July 8 and 16	37
14	., 8	., 16	Carco	July 16, 23 and 30	33

SUBSTANCES UPON RADISH MAGGOTS.

OF EARLY RADISHES.

No. of wormy plants.	Per cent. wormy.	Remarks.	No. of row.
38	90.4	Roots not nearly so good as in corrosive sublimate rows.	13
94	68.1	" " " " " " " "	17
201	69.1	Vigorous foliage, long, rough, slender, poor quality roots.	18 19
17	11.7	Moderate foliage, large, globular, smooth, good quality roots.	20
18	13.5	" " " " " " " "	21
50	47.6	Vigorous foliage, long, slender, rough, poor quality roots.	22
68	67.9	" " " " " " "	23
70	60.8	" " " " " " " "	24
79	65.2	Roots not nearly so good as on corrosive sublimate rows.	25
50	81.9	Roots like tobacco rows, much inferior to corrosive sublimate.	26
30	78.9	Not a good test.	27a
25	71.4	" " "	27b
37	33.0	Mostly surface injury; good roots for table purposes.	28

EARLY RADISHES.

No. of wormy plants.	Per cent. wormy.	Remarks.	No. of row.
121	50.0	Not so good roots as on corrosive sublimate rows.	32
0	0.0	Good quality of roots, growth of young plants checked at first	33a
0	0.0	" " " " " " " "	33b
3	4.7	" " " " " " " "	33c
1	0.9	" " " " " " " "	33d
82	56.2	Foliage good, roots not so good as corrosive sublimate rows.	34
128	56.1	" " " " " " " "	35
0	0.0	All plants killed; same result later where 1 part to 32 of water was used.	37

RADISHES.

No. of wormy plants.	Per cent. wormy.	Remarks.	No. of row.
20	17.2		4
7	8.2	Note: The later application gave the better results.	5
4	4.3	Note: The two applications gave better results than one.	6
15	23.8		7
27	21.9		8
12	16.2	The later date here again gave better results than row 8.	9
8	6.5	Note: Two applications better than one.	10
12	30.0		11
15	38.4		12
18	32.7		13
9	21.4		14

INFERENCES FROM THE ABOVE TABLE AND FROM OBSERVATIONS IN THE FIELD.

First. Corrosive sublimate was the only substance used which gave satisfactory or fairly satisfactory results, the results from it being better than the percentages indicate, because nearly all the injuries were on the surface, only a few being deep in the tissues, whereas in the checks a considerable percentage were deep in the tissues. The plants were somewhat older than usual when pulled. This possibly accounts for surface injuries.

Second. Tobacco dust alone, or soft coal soot alone, or a combination of the two, or a combination of tobacco dust, sulphur and arsenate of lead powder, gave no control and in most cases seemed to encourage the presence of the insect.

Third. Under conditions such as we had last year, corrosive sublimate had a decidedly beneficial result upon the size, shape and quality of the radishes causing them to be smooth-skinned and of good size. On the contrary, tobacco and soot both acted as fertilizers and gave excellent foliage but inferior form and size of the enlarged part of the root, this being elongate, slender, rough on the surface and unattractive in appearance.

Fourth. Corrosive sublimate if applied stronger than 1-1,000 to young plants, weakens them and causes a distinct shock, though they soon outgrow this. The same thing happens to cabbages if the roots, when being transplanted, are soaked a couple of minutes in the liquid, yet even then they recover. Too heavy soaking of soil around very young plants in the field, even with 1 to 1,000 may cause a sickly appearance of foliage for a few days.

Fifth. Sufficient tests have not been made yet to allow a reliable conclusion to be formed as to the best time to apply corrosive sublimate to radishes.

Sixth. Corrosive sublimate applied within 24 hours of sowing the seed appears to have no injurious effect upon germination.

HOW DOES CORROSIVE SUBLIMATE ACT IN THE CONTROL OF THE CABBAGE MAGGOT?

1. DOES IT KILL THE EGGS? Eggs were placed on blotting paper in pill boxes containing soil freshly saturated with corrosive sublimate 1-1,000. The result was that of 80 eggs treated, 64 or 80 per cent. hatched. In the check, out of 134 eggs, 128 hatched or 95 per cent. The above results represent not a single test, but a series with a few eggs at a time. There seems no doubt therefore, that if the eggs hatch under these circumstances, they would hatch in the field in soil treated with corrosive sublimate.

2. DOES IT KILL THE LARVÆ? Various methods were employed to test whether corrosive sublimate kills the larvæ in any stage of their growth.

Out of 190 larvæ treated 83 pupated, 4 remained larvæ to the end of the test and 103 or 56.8 per cent. were missing. More would have been missing had they not in some cases been put in retainers from which they could not escape.

In the checks, out of 46 larvæ, 35 pupated and 11 or 23.8 per cent. were missing, 5 of these by accident.

Some of the missing treated larvæ were doubtless killed, especially the very small larvæ, but most of them crawled away and escaped. Where the larvæ were confined so that they could not escape, it was found that, while a good many died, yet many lived. It was observed however, that there was an evident desire both of large and small larvæ to avoid contact with this liquid compared with water. *Our inference* is therefore, that control is not to any large extent brought about by the death of the larvæ from contact with corrosive sublimate, but possibly from its repellent action, which causes the larvæ to wander away from the plant and thus perish. Larvæ, however, once well inside the plant, do not seem to be affected.

3. Does it Kill the Pupae? Three flower pots filled with fine sandy soil were sunk in the soil this spring and then thoroughly saturated with corrosive sublimate. Pot 1 contained 100 puparia and was saturated with 1-1,000 strength.

Pot 2 contained 100 puparia and was saturated with 1-1,000 strength.

Pot 3 contained 35 puparia and was saturated with 1-240 strength.

Eight other pots containing in all 885 pupae were left untreated and served as checks.

Results.

Pot 1 of the treated puparia gave an emergence of 11 flies.
Pot 2 of the treated puparia gave an emergence of 47 flies.
Pot 3 of the treated puparia gave an emergence of 2 flies.
Total emergence from treated pots 60=25.5 per cent.

From the 885 pupae in the checks 174 flies, or 19.6 per cent. emerged. We can therefore only conclude that corrosive sublimate does not kill the pupae.

Incidentally it may be mentioned that from the 885 untreated pupae 124 cynipid and 15 staphylinid parasites emerged, and from the 235 treated puparia 20 cynipids and 1 staphylinid.

THE PRESENT STATUS OF MILL-INFESTING PESTS IN CANADA.

E. H. Strickland, Entomological Branch, Ottawa.

The Entomological Branch of the Dominion Department of Agriculture is undertaking a series of investigations and experiments upon the control of the insect and other pests of flour mills, bakeries, elevators and warehouses. This has necessitated a preliminary visit to representatives of these various industries throughout the Dominion for the purpose of ascertaining what are the most important pests, and the effectiveness of methods already in operation for their control.

In so far as the flour mills are concerned one pest, namely, the Mediterranean Flour Moth (*Ephestia kuehniella*), so far exceeds all other classes of mill pests in the trouble it causes, that the majority of millers look upon it as the only one meriting serious consideration. One of the favorite breeding places of this pest is inside the legs of conveyors, where the larvæ spin a voluminous mass of silk, which collects large quantities of flour and dust. If no precautions are taken this, in time, entirely clogs the elevator, which must then be dismantled and thoroughly cleaned.

One other group of mill pests—the Flour Beetles (*Tribolium* spp.)—is almost as prolific in Canadian mills as is the moth, but since these beetles do not interfere with the milling process they are, unfortunately, inclined to be tolerated in the various parts of a mill which they inhabit. From the millers' point of view this is readily understood. The moth is a serious menace to the smooth running of the mill. Hence its control is of great, sometimes even of vital, importance to the operation of an infested mill. The beetles on the other hand do not inconvenience the miller, and they are readily sifted out of flour, which apparently leaves the mill in as good condition as if it had never been in contact with them. Suppose, however, one takes a sample of flour which is, to all appearance, in good condition from the mill badly infested with these beetles, and places it in a tightly closed tin, thus assuring that no beetles can obtain entrance for oviposition. An examination of this tin, say in six months' time, will in all probability reveal the presence of a large number of beetles. This is due to the fact that the beetle lays its eggs in such places as the inside of spouts, and in elevator boots. Thus the presence of the beetles results in the contamination of passing flour with eggs. They measure about 1/60 inch in diameter and could never be detected in the flour.

The owner of a badly infested mill rarely experiences any trouble with his flour, since he stores it for a very short time, and when it leaves his warehouse it is, in so far as he knows, a perfectly clean consignment. Should this flour be sold for local consumption it will probably be sterilized by being baked before the newly hatched larvæ have attained a sufficient size to attract the attention of their consumer. If, on the other hand, the flour is exported to some such warm climate as that of the West Indies, the time which must elapse, together with the temperatures at which it will be kept, before it arrives at its destination, offer every opportunity for the completion of at least the greater part of the beetle's life cycle. A further delay in the consumption of this flour may allow the completion of several generations, with the result that the consignment becomes seriously infested. Such conditions may not often occur, but prior to the general adoption of control measures, complaints were more frequently made of infestations developing in consignments of exported flour. Hence, from a national point of view, it is seen that mill pests have a greater significance than merely in so far as they affect the mill in which they live and breed.

Fortunately, we have at our disposal several means of reducing to a minimum, if not in all cases entirely eradicating, these pests, and the majority of millers have shown great energy and enterprise in adapting these remedies to their mills. The most important control measures are: superheating, fumigating and freezing.

Superheating is a method of control based upon the observation that a temperature of about 120° Fah. will destroy any stage of insect life in a very short time. A mill in which the pests are controlled by superheating is usually fitted with sufficient permanent steam pipes to raise its "room temperature" to about 130° F., but similar results can be obtained with the aid of temporary coils, and by utilizing the heat from a drier.

Heating is most conveniently effected over a week-end. When the mill closes down on Saturday night all elevator boots, etc., are opened up to allow a free circulation of air, and the heat is turned on. By the following morning the required temperature is obtained, and by preference it is maintained for over twenty hours. This duration of time is not necessary for the destruction of exposed pests, but it is desirable in order to assure that the heat penetrates into all accessible places. Work can be resumed on the Monday, though the first part of this day is usually occupied in giving the mill a thorough cleaning down. The result of this treatment is that all species of mill pests, in whatever stage they were present, have been destroyed in every part of the mill which was raised to a temperature of 120°, whether such places were accessible to a free circulation of air or not. Superheating is becoming increasingly popular with millers, and it is significant that only those who have never employed it are able to advance serious objections to its use.

Fumigation with hydrocyanic acid gas is a control method which served a very useful purpose before the superheating process was perfected, but it must now be relegated to the "out-of-date" class, since it has the following disadvantages when compared with the rival method: 1. It is dangerous to human life. 2. While the initial expense is less than that of installing an efficient heating system every subsequent operation is far more expensive than that of turning on the steam. 3. The gas fumes are less penetrating than the heat, and since a high concentration is required for the destruction of eggs many of these, which are laid in protected places, may escape. 4. The mill must be idle for a longer period at each operation.

Freezing is a method much in vogue in the Prairie Provinces, where extremely low temperatures can be relied upon at almost any time in the winter. When there is so much of this "natural resource" annually going to waste it would seem to be desirable that it be utilized to the greatest extent possible. We have no records of experimental data as to what low temperature is necessary to destroy the different stages of the various pests, and there is some doubt as to whether the extreme cold experienced in this country will destroy all of the stages. Some of the smaller mills do not run at all in the winter but they never appear to be quite free from pests when they commence operations in the spring. This may, however, be due to an annual re-infestation.

A mill, when it is opened up to freeze for a couple of days, is usually submitted just before or after the operation to a more vigorous cleaning than it receives at any other time in the year. To what extent the evident benefit derived can be ascribed to the cold or to the broom is a debatable point. Adults of the moth and the beetle certainly perish without exception at 25° below zero, but we have no definite data as yet upon the effect on immature stages.

Freezing is, in most cases, acknowledged to be hard on the mill. Steam pipes obviously must be completely drained, and this is not always easy. Some lubricating oils stiffen up at low temperatures, and the mill should not be re-started until it has warmed up to normal temperature. Metal work warms up more slowly than the rest of the mill. This results in sweating, which collects dust and may even cause rust. These difficulties have been overcome in several mills, among them some of the largest in the country, and freezing is practised by them with evident success. The first cold snap of winter is, however, usually rather anxiously awaited in such mills since, by the time it arrives, the moth is often "getting pretty numerous again." This is the main disadvantage to freezing as the sole method of controlling pests. It cannot be applied at any season of the year, and is not available in the summer when the moths are most active. It is, however, to be hoped that an opportunity will be offered this winter for us to obtain some definite data upon the value that low temperatures have in the extermination of mill pests.

These, then, are the chief methods of reducing the pests in our mills, but we are faced with one more problem in this connection, namely, that of re-infestation. This possibly is the main problem, and certainly, had it been solved in the first place, the problems of eradication would have been non-existent, for mill pests are not indigenous to mills. Some of the newest mills in the country have been heavily infested almost as soon as they were put into commission, while some others have remained almost free after many years of running.

Often this infestation, and re-infestation after eradication, is well-nigh unavoidable. A city mill with a local trade stands little chance of immunity.

but a large isolated mill, catering mainly to export trade, should avoid infestation if proper precautions are taken.

In probably 90 per cent. of the mills now infested with moths the pest has been introduced in second-hand bags. These bags are rarely taken into the mill. In most cases they are dumped into the adjacent warehouse to be used for feed stuffs. Sometimes they are cleaned with beaters or by suction, but a few eggs are liable to escape destruction by either treatment. More often the bags are not treated at all. In either case, the warehouse sooner or later becomes infested and it is only a matter of time as to when the pest will appear in the mill itself. The moths are rather unwilling fliers but they are very tame and are readily conveyed from one room to another on the clothes of people passing back and forth.

The remedies which are suggested for this means of infestation are:

(1) To avoid using second hand bags entirely. This, however, is not often practicable, except in the case of manufacturers of special brands of breakfast foods, whose reputation would suffer immeasurably were they to be unfortunate enough to distribute a consignment of "buggy" cereals among an unforgiving public.

(2) To sterilize by heat all second-hand bags before they are allowed to enter the warehouse. The bags should be allowed to accumulate in a small detached building which can be superheated say, once every two weeks; after each operation all of the contained bags should be transferred to the warehouse before more are admitted.

For a new uninfested mill such a method would pay for its small initial cost in a few months. In so far as we are aware, this method is not actually in use as yet in any mill, though it is "under construction" in at least one plant.

(3) To superheat the warehouse as well as the mill. This method would entail too much expense to be practised for most mills, though it would be of great value.

Generally speaking, then, millers throughout the country are keenly alive to the questions relating to the control of pests, but it would seem that a little more attention might be paid to the problem of avoiding re-infestation of a mill once it has been effectively cleared of its present unwelcome guests.

SOME NOTES ON THE LIFE HISTORY OF OUR COMMON JUNE BEETLES.

H. F. Hudson, Dominion Entomological Laboratory, Strathroy.

The white grub, the immature form of the May or June beetle, is one of the most important and most injurious of soil-infesting insects, and one of the hardest to control, on the sand and sandy loam soils of Western Ontario. They may occur occasionally in clay soils, but I have never observed or known of any injury by these insects on the heavier types of soil. Since 1914, observations on the life history of these important insects have been under observation, and though the work has had a chequered career, we have been able to breed out from the egg, the complete life history of three species. So far as our collection of beetles is concerned, and that involves many thousands, we have in Middlesex County seven distinct species, but probably only four are really common, although no extensive collections of beetles have been made outside of Caradoc Township. This is somewhat to be regretted as it does not give us a proper idea of the distribution of the different species. The seven species known to exist in Middlesex County are *L. fusca, L. rugosa, L. dubia, L. gibbosa, L. marginalis, L. ilicis*, and *L. inversa.* The three species raised from the egg are *L. dubia, L. rugosa, L. gibbosa*. The year 1914 was an excellent year for the collection of beetles, thousands were present, and ash, willow and butternut trees, were freely stripped of their foliage, while the early blossoms of cherry trees were freely fed on by the beetles. Coming early in May, the time of appearance being governed largely by temperature the beetles soon pair, frequently before they have eaten anything, but from observation eggs are not laid until from two to three weeks after fertilization. The female pairs frequently, at least I have seen the same pairs frequently in copula in their breeding cages. Pairs taken in copula May 16th, 1914, did not lay eggs until June 16th, but this was possibly due to my negligence in omitting to place a piece of sod in the breeding cage for the female to oviposit in. I noticed the day after the sod was introduced eggs were laid. The eggs are small, oval, of a pearly white lustre, each deposited singly in a ball of earth from 2 in. to 6 in. below the surface. After having been laid several days the eggs increase slightly in size, probably due to the absorption of moisture, become spherical in form and change to a reddish colour just prior to hatching. Our breeding cage records show that eggs hatch in from ten days to three weeks with an average of two weeks. This is somewhat difficult to gauge as we have noticed breaking open the little balls of earth to ascertain the egg yield, has undoubtedly a detrimental effect on the vitality of the young grub. The work of 1914 was practically concluded owing to the war, and although an assistant was procured in 1915, the results of the previous year's work amounted to nil. With the appointment of Mr. H. G. Crawford in the spring of 1916 the work obtained a new lease of life and much of the success of this work is due to his untiring and unceasing efforts. Starting with two species the results of that work were carried through to completion in the fall of 1918. On my return in the spring of 1917 the work was enlarged and additional species studied. We have now definitely ascertained the life history of *L. gibbosa, L. rugosa*, and *L. dubia* to be at least three years and in some cases it may be four.

The grubs feed most ravenously during the second and third year of their growth, prepare to pupate the latter part of July or early August of the third year and produce the adult early in September where it lies comfortably in its earthen cell 6 to 8 in. below the surface until the advent of warm spring weather. In 1914 some 8,370 beetles were collected from various trees and shrubs, and a summary of the collection data thus obtained is worthy of mention. *L. gibbosa* is about the earliest species to appear in numbers and is very abundant until the middle of June when its numbers begin to decrease although scattering individuals may be taken until the middle of July. In fact the species comprise 66 per cent. of all beetles collected that year. In point of numbers the males exceed the females in the proportion of 1.74 to 1 or nearly twice as many males as females, the collection from lights and trap lanterns have not been included.

L. rugosa. This species appears about a week later than *gibbosa* and is not an abundant species, it feeds freely on the foliage of most trees. In point of numbers the males exceed the females in the proportion of 1.78 to 1.

L. fusca. Appears about the same time as *gibbosa* but is not so abundant in the early part of the season. Taking the season through it is next to *gibbosa* in order of abundance. The proportion of males to females in this case is reversed, the females predominating in the proportion of 1.47 to 1.

L. dubia. One of the first species to appear in spring but not common. Its season would seem to be shorter than any other species, no specimens having been taken after the 24th June. Females were more abundant than males the former predominating in the ratio of 2.2 to 1.

NOTES ON COLLECTING. There are some points of interest in collecting that are worthy of mention. In May and early June the beetle movement is quite regular, and the evening migration takes place usually a few minutes before 8 p.m., and is usually complete in 15 or 20 minutes. They are most abundant on warm nights with a temperature between 65 and 70 degrees, and the best time for collection is between 11.30 p.m. and 1.30 a.m. Likewise the return migration to the ground is similar, and is usually complete by 4 a.m. It seems to be governed by the brightness of the morning and as "West" (8th report Ill. State Ent.) has pointed out, it seems as though the first bird note were a signal for the beetles to fly to their day-time hiding places. Should the temperature be not over 60 degrees, collecting may be safely begun by 9 p.m. as the beetles are not over active at that temperature, but should it be above that it is better to wait a little, until the beetles are less active as they are strongly attracted to lights, and will fly to the light or assemble on the collecting sheets from all directions and from all varieties of trees. The earlier in the evening collections are made the more beating the branches require, while if it is delayed, say until midnight or a little later, the least touch will cause the beetles to fall. It seems as though the cool night air has a stupefying effect, and once dislodged they make no effort to rise again. Collecting from trees inhabited by June beetles does not always indicate that they feed upon that particular plant, as I have ascertained. For instance, on May 18th a soft maple tree was found to be alive with June beetles, and the noise was like the hum of swarms of bees, yet on examination the following morning, no injury of any consequence was observed, except that an occasional outside margin of a leaf had been slightly eaten. Their sole object in thus assembling in this tree was principally for copulation purposes. Their habits in the daytime are equally interesting, leaving their food plants early in the morning, they hide themselves in tufts of grass, or in the soil ½ to 1 in. deep. A heavy rain will keep them in their daytime hiding places, but a light rain will not interfere with their movements. Should a heavy rain come on while they are feeding it has the effect of making them less attractive to lights. Temperature is a very important factor, the lowest temperature I have recorded when collections were made was 47 degrees at 9 p.m. At this temperature beetles are very scarce.

CONTROL MEASURES. We have been rather unfortunate in securing much information on the natural control of these insects. It is a matter of common observation that crows, blackbirds and domestic poultry feed readily on the young grubs, while skunks undoubtedly also relish them. On several occasions we have reared the tachinid *Microphthalma disjuncta* and probably *Pelecinus polyturator*, although the specimen is not perfect. On two occasions in badly infested fields I collected a number of cocoons of a digger wasp, presumably *Tiphia inornata*, but have not been very fortunate in rearing them out. With the scarcity of birds and other natural agencies of control, the question of suppressing an outbreak seems to be one of agricultural rather than entomological procedure. From a careful survey of the crop rotation on several farms in Caradoc Township, it would seem to indicate that arable land should not be in pasture more than two years and a definite system of short crop rotation followed. The following rotation followed on one farm is of particular importance, in that not only is the fertility of the soil increased, but since the adoption, there has been no injury whatever by white grubs or any other insect. First year oats, seeded to clover, hay crop removed, land planted to wheat, seeded to clover again and planted again to potatoes and corn. Here we have two clover crops in four years and no crop longer than one year on the ground. This, of course, is only applicable to arable land, the question of old pastures is still a perplexed problem, except when brought under cultivaton. Trapping the beetles by the use of lanterns is hardly applicable, because fully 75 per cent. of such collections are males. It would appear that short crop rotations, frequent growing of clover, and clean farming will do more to decrease the spread of this insect than any other means.

REPORT OF THE INSECTS OF THE YEAR—DIVISION NO. 6.

H. F. HUDSON, STRATHROY.

Weather conditions in Western Ontario have been both favorable and otherwise to insect life. The spring was cold and very wet, this was followed by a hot and very dry summer. A brief summary of the more important injurious insects is appended below:

CLOVER LEAF WEEVIL (*P. punctatus*). In the low-lying pasture fields south of London, Ont., more especially in and around Delaware Township, clover and timothy fields were most heavily infested with this weevil. They were present literally by millions and probably no such heavy infestation has ever been witnessed in this section before. Every blade of timothy had a grub curled around it and every clover leaf was badly riddled with small holes and over seventy grubs were taken from a single clover plant. Fortunately the extremely wet weather produced a fungus disease amongst them and in less than a week the whole outbreak had subsided.

CUTWORMS. These insects have been responsible for considerable injury and in nearly all cases the culprit has been the "glassy cutworm." In nearly all cases the affected field was an old sod.

POTATO FLEA BEETLE (*Epitrix cucumeris*). Extremely abundant this year but is readily controlled by spraying with arsenate of lead.

POTATO BEETLES (*Leptinotarsa decemlineata*). Probably more abundant this year than usual, but late planted potatoes were scarcely injured; in quite a number of cases potatoes planted in late June were not sprayed at all.

POTATO LEAF-HOPPER (*Empasca mali*). An old pest in a new guise. The potato crop in Western Ontario has been considerably reduced in yield, in some cases I should say at least 25 per cent., due to the ravages of this insect. Classed as a new pest by potato growers adequate means of control were not generally known; consequently the insect had almost its own way. I have had partial success by the use of "Black Leaf 40" and soap, using one tablespoonful of the nicotine solution to one gallon of water plus two ozs. soap.

THE STRAWBERRY ROOT WEEVIL IN BRITISH COLUMBIA.

W. DOWNES, VICTORIA, B.C.

Of the many many insects that trouble the small fruit grower perhaps few equal in destructiveness the Strawberry Root Weevil (*Otiorhynchus ovatus* Linn.). Within the last ten years or so its prevalence in the strawberry-growing sections of the British Columbia mainland and Vancouver Island has been a matter of increasing concern to the planters, and in some of the districts where the industry has been longest established it became a question whether its profitable continuance could be any longer maintained.

In Oregon in 1912 some work was done in the study of the Weevil by Prof. A. L. Lovett[1] and notable work was done in British Columbia in 1913 by Mr. R. C. Treherne[2] who established the main principles for its control. During the last two seasons further studies on this insect have been made by the writer in the Gordon Head district of Vancouver Island and some new information regarding its life-history has been brought to light.

The strawberry-growing sections of Vancouver Island are mainly areas of light sandy soil on which the berries seem to do better than on heavier land, though here and there one finds plantations on stronger soil, usually on the lower levels. Cultivation is on the hill system. The worst infestations were found always on the light land, the reason probably being that such soils provide the best facilities for penetration by the young grubs. The degree of infestation usually varied according to the age of the plantations, one-year-old fields being frequently free or showing an average infestation of one or two weevils to the hill. Two-year-old fields would average three or four times that number, while the highest numbers were nearly always recorded from three-year-old fields. This is, however, not by any means a general rule, as much depends on the proximity of young fields to older plantations and cases were found where one-year-old fields adjacent to an old plantation were badly infested, and in 1918 a two-year-old field of five acres was totally destroyed. This field in 1917 produced 2,000 crates of berries; in 1918 only forty were gathered. In this case the owner had been growing strawberries on his farm for many years until a heavy population of weevils had concentrated there; moreover, the situation was aggravated by the practice of planting strawberries after clover sod, a proceeding calculated to provide the succeeding berry crop with a plentiful supply of weevils, as clover is one of the crops upon which the strawberry root weevil thrives.

At the present time, owing to general appreciation of the principles of control, the strawberry root weevil seems to be decreasing in the Gordon Head district. At Keatings, on the Saanich peninsula, a slight increase is reported, and on the Lower Mainland the situation is very much as it was some years ago with heavy infestations reported from certain points.

ORIGIN AND LIFE HISTORY.

Recent investigations show that the strawberry root weevil is undoubtedly indigenous and not introduced. Mr. R. C. Treherne[3] has found the weevil at various altitudes up to 4,000 ft. in the mountains and on isolated rocky islands several hundred yards from the mainland. I myself have found it in spots far removed from cultivated areas, and all the evidence tends to show that it is not an introduced insect but primarily a species infesting grasses and various forms of native vegetation. To the list of wild host plants of the larvæ given by Lovett[1] I am able to add two more, Snowberry (*Symphoricarpus racemosus*) and Oak on both of which I have found the larvæ in Victoria. It is a common pest in gardens and the grubs may be found attacking a great variety of plants.

To the list of cultivated plants attacked by the larvæ Red Clover must be added. I have found them very numerous in clover sod at Gordon Head, even in the spring, on sod that had been ploughed down the previous fall. Thus in any scheme of cultivation in which strawberries have a place it would be obviously unwise to plant them following a crop of clover. A suitable system of rotation will be referred to later.

OVIPOSITION. Observations taken during two seasons at Gordon Head showed that the oviposition period extended from the middle of May to the middle of September. The eggs are laid promiscuously around the plants, sometimes against the crown itself, and often buried a quarter to half an inch below the surface. When a crevice in the soil is available this may be taken advantage of as a spot in which to deposit the eggs. Formerly it was supposed that all the eggs were deposited by those weevils which emerged in the summer, but I have this year conclusive evidence that the over-wintered adults also deposit eggs in large numbers. Commencing on April 1st, collections of over-wintered weevils were made at intervals up to June 13th and kept for observation. That these were true over-wintered individuals there can be no doubt, as the earliest date of the emergence of the summer brood at Gordon Head is during the last week in May, and this year adults were not found in the soil in teneral condition until June 13th. Throwing out of consideration those collected in June, we have four lots of over-wintered adults collected on April 1st, May 1st, May 19th and May 31st. The first lot collected commenced to oviposit on May 18th (probably later than under natural conditions) and those collected on May 19th commenced to oviposit on May 28th. All the lots continued to lay eggs throughout the summer until August 30th when oviposition ceased. The highest average number of eggs per individual was 198, laid by those collected on June 13th, and the next highest 130, laid by those collected on May 19th. The earliest lots collected laid very few eggs, averaging 12 and 28 respectively, this being perhaps due to artificial conditions. In the third week in August the weevils began to die rapidly and by the first week in September nearly all were dead.

OVIPOSITION BY SUMMER BROOD. It was intended to make the study of this point more complete this year, but owing to an unfortunate accident to our emergence boxes in the field, sufficient material was not obtained and the data were got from a limited number which were bred in the laboratory. These commenced to deposit eggs on July 20th, probably very much later than would be the case in the field. Under laboratory conditions the weevils are somewhat retarded and do not prove as healthy as those in the field. The vials were examined and the eggs counted every four days. The maximum number of eggs laid by an individual in this experiment was 249 and the minimum 73, while the average was 154, all deposited within a period of six weeks. Thus it will be seen that there are two broods depositing eggs simultaneously. In the case of both broods oviposition ceased at the same time this year but in last year's experiments many weevils continued to lay until the middle of September. Endeavour will be made another season to determine whether the same weevils oviposit twice. In no single instance as yet have I discovered weevils of the summer brood that did not lay eggs and therefore I assume that a proportion of the summer brood does not die but after ovipositing hibernates, and in the spring, after a period spent in feeding and development, oviposits again. If this is not the case, it is difficult to account for the origin of the numerous overwintered individuals.

Parthenogenesis. In all the experiments conducted here no male weevils have been discovered. Although about 200 specimens have been examined and dissected only those have been found possessing the genitalia proper to the female. Also among the large number kept in confinement none were ever found in copulation; neither has it been observed in the field. Consequently the belief has been held by us for some time that *O. ovatus* is parthenogenetic. This impression was strengthened by the recent discovery in France by J. Feytaud[1] that *O. sulcatus*, its near ally, was parthenogenetic, making the fourth Coleopteron known in which the method of reproduction is by parthenogenesis. To test the matter a number of pupae were collected in the field this season and isolated in vials. On reaching adult condition they were placed each in a glass vial loosely stoppered with cotton wrapped round with paper, and fed on strawberry leaves. The vials were kept in my house and examined at intervals of two or three days. At first cotton wool was used for vial stoppers but it was found that the weevils deposited eggs among the wool, making them very difficult to find. When the wool was wrapped in paper the difficulty was surmounted, although the beetles would occasionally deposit eggs in a fold of the paper. Oviposition commenced on July 20th and continued until August 30th. The eggs of each individual were kept separate. On August 24th larvæ were found to have hatched from eggs laid by weevil No. 5 and within a few days larvæ were also found in the other vials. Thus it appears evident that the weevil is parthenogenetic. *O. ovatus* thus makes the fifth coleopteron known to be parthenogenetic the others being *O. turca* Bohem, *O. cribricollis* Gyll, *A. ligustici* Linn., and *O. sulcatus* Fabr. Some individuals produced a larger proportion of infertile eggs than others, and it may be noted that twenty days elapsed between the time when the first food was given and the commencement of oviposition. This is a greater period than would occur in nature and in the experiments conducted by Treherne[2] the minimum period was found to be eight days. I attribute the difference to confinement and artificial conditions of feeding.

Incubation and Fertility. Experiments made to find the period of incubation showed that it varied from sixteen to twenty-two days.

The fertility of the eggs varied from 68 per cent. in the case of those laid by overwintered adults to 80 per cent. in the case of those laid by the summer brood.

Duration of Pupal Stage. This was found to vary from ten to twenty-six days. The adults commenced to harden at the end of twelve hours and are completely chitinized in seven days. One individual came to the surface in four days, but while able to climb was not completely hardened.

Emergence of the adults commenced at the end of May. In 1918 the first were taken in the cages on May 25th and the emergence continued until the end of June with a maximum during the second week in June. In 1919 the emergence was later, the first adults being found in teneral condition on June 13th and these would not normally emerge for another week. The season was colder than the previous one and this would account for the difference as the pupae are retarded by lower temperatures.

Migration. On the advent of warm weather in the spring there is a general movement of hibernated weevils from their winter quarters to their feeding ground. Every conceivable spot may be used by them in which to hibernate and where they are especially numerous, dwellings are frequently invaded by them to the consternation and annoyance of the owners. Piles of stones or logs, and fence lines overgrown with weeds and brush form ideal quarters, but where the winters are mild, as on Vancouver Island, many spend the winter among the crowns of the strawberry plants. The weevils begin to move in March and are fairly active until May when their migratory activities appear to lessen, after which, in June, their numbers are augmented by the newly emerging summer brood and a further movement begins which reaches its climax at midsummer, then lessening until late summer when they seek winter quarters.

Regarding the distance travelled by them in a season no definite evidence was obtained, but one new field at Gordon Head, eighty yards wide, was infested throughout in a single season, the weevils coming from an old patch adjoining. The young patch was bordered on three sides by bush so the weevils could only come from the side adjoining the old patch. On this side the average number of larvæ per hill was 27, in the centre 16, and at the further end 7. I would say, therefore, that the weevils would be likely to travel at least double the width of this patch, or from 160 to 200 yards.

Measures of Control. The observations made during the last two seasons have shown that the main principles of control as formerly laid down are undoubtedly correct. There is no poison or chemical treatment of any kind that we know of that can be applied to the plants without injury and will at the same time control the weevil. The question is a cultural one and the best results are obtained by a suitable rotation of crops, a double object being attained by discouraging the weevil and maintaining soil fertility. At Gordon Head the Provincial Government has leased six acres in a badly infested locality and is endeavouring to demonstrate a system suitable to the district. Briefly outlined this would be as follows: Presuming that we start with an infested field, the plants should be pulled up and burnt at the end of August or beginning of September. Leaving them until this time induces the adult weevils to remain in the field and deposit their eggs there. Then the field may be ploughed and should be kept fallow about a month, the spring-tooth cultivator being frequently used to bring out all strawberry roots that may remain. This proceeding will starve out all the young grubs in the soil. A suitable crop to sow the land to would be fall wheat with vetches or clover. The land may remain in clover two years and should then be fall ploughed and potatoes planted the following year. The next year the field may be planted back to strawberries the land being clean and free from weevils as the potato is one of the crops on which they cannot live.

It is recommended that not more than two crops of strawberries be taken from a field under ordinary conditions. It is not only important not to overcrop the land, but leaving the land in strawberries too long allows the weevils to concentrate there and is inviting disaster. It is also important that judicious applications of barnyard manure be applied to keep the land in good heart. By growing vigorous healthy plants they will be in better condition to stand an attack of weevil and will recover more rapidly. As to the advisability of including clover in the scheme of rotation, we have doubts as to the wisdom of this owing to the danger of maintaining weevil in the land, but we know of nothing that will quite take its place unless it can be shown that it is equally profitable to grow peas or vetches or some other legume and still maintain the fertility of the soil.

The recent light thrown on the oviposition of the weevil emphasizes the necessity of destroying as many adults as possible. It is believed that chickens will prove of the greatest help in this matter and it is suggested that small lots in colony houses should be allowed to run in the plantations. They readily pick up the weevils and the good they do far outbalances the harm done by scratching among the plants. At blossoming time they may be shut up and allowed to run again after the crop is off. The difficulty in closely settled districts of preventing newly set plantations from being re-infested by adjacent old ones is a problem that we are attempting to solve by the aid of wooden barriers with a band of tanglefoot. These have been tried elsewhere and have been found to be partially successful and the results obtained at Gordon Head fully justified us in continuing our experiments. At the present time we have not gone sufficiently far to be able to say that they are commercially practicable but we believe they will prove a useful adjunct in weevil control.

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THE STRAWBERRY WEEVIL.

W. A. Ross and C. H. Curran, Dominion Entomological Laboratory.
Vineland Station.

The following paper is based largely on field observations made in 1918-19 and on preliminary experiments conducted during the past season in the Niagara and Oakville districts.

History and Distribution in Canada.

The strawberry weevil is a native insect, which, it is believed, bred originally in the buds of the redbud, the wild blackberry and wild strawberry.*

It has been known as a strawberry pest in Canada at least since 1886. In the Dominion Entomologist's Report for 1890, Mr. W. H. Hale, of Sherbrooke, makes the following statement: "For several years I have been suffering from the ravages of some sort of insect which attacks the buds of all the staminate varieties of strawberries: a small puncture is made through an unopened sepal and an egg is deposited. The stalk is then partially or entirely cut through. . . . In a large field of strawberries in which 80 per cent. of the rows were pistillate varieties not a single bud was touched, while the remaining rows of strawberries were almost entirely denuded of buds. This same trouble was noticed in Staten Island and Hamilton, Ontario, in 1886. . . ."

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* Slingerland and Crosby, Man. of Fruit Insects, p. 373.

Further reference is made to strawberry weevil outbreaks in succeeding reports of the Dominion Entomologist, and also in the reports of the Entomological Society of Ontario.

So far as we are aware the weevil is recorded as being injurious in only two provinces in Canada, viz: Ontario and Quebec.

HOST PLANTS AND INJURY. In Ontario the strawberry weevil has been bred from the buds of the strawberry, raspberry and blackberry, and it has also been observed attacking wild strawberries and rambler roses. The dewberry, the red-bud or Judas tree and the yellow flowered cinquefoil, are recorded by Slingerland and Crosby as being additional host plants of this species.

The injury is caused by the female weevil cutting off the flower buds, after depositing her eggs within them.

STRAWBERRY. Occasionally the yield of strawberry plantations in Southern Ontario, especially in the Niagara District and Halton County, is seriously reduced by the weevil, or as it is commonly called, "the cutter." For example, in 1918 from 30 to 75 per cent. of the buds in some strawberry fields near Oakville and Jordan were destroyed by the pest. In a badly infested ¾ acre plantation at Jordan only nineteen crates, or 513 quarts of berries were harvested.

All the common staminate varieties are subject to attack. Varieties with imperfect or pistillate flowers are practically immune.

RASPBERRY. According to our observations the raspberry crop is never injured to any appreciable extent, chiefly, we believe, because at the time raspberry buds are put forth the overwintering adult weevils are fast dying out. This past season we examined several raspberry plantations adjoining strawberry fields, but even the worst attacked bushes had less than ten per cent. of the buds severed.

BLACKBERRY. A patch of blackberries in the Vineland district was rather seriously injured by the weevil last spring, about 25 per cent. of the buds being destroyed. In the row next to an adjoining field of strawberries about 75 per cent. of the buds were severed. It was noted that frequently the weevil severed the cluster stem and thus, at one stroke, destroyed several buds.

As a general rule, however, weevil injury to the blackberry is negligible.

ROSES. Mr. Bartlett, an Oakville fruit grower, observed the weevil—an insect with which he is very familiar—severing the buds of his rambler roses.

LIFE HISTORY.

SUMMARY. The winter is passed in the adult stage, probably under vegetation and rubbish, in waste and bush lands adjoining the strawberry fields. In spring the insects leave their winter quarters and appear on the strawberry plants about the time the first buds are forming. By means of her slender snout the female weevil punctures the blossom buds, and deposits her eggs singly in the interior of the buds. After depositing an egg she then crawls down the blossom stem and cuts it so that the bud either falls immediately, or is left hanging for a few days, by a thread. Within the severed buds the whitish grubs which hatch out from the eggs, feed on the pollen and other interior parts. They become mature in about two weeks, pupate, and emerge as adults during the latter part of June and throughout July. The new adults feed for a short time on the pollen of various flowers and, then in midsummer, they seek their hibernating quarters. There is only one generation a year.

THE ADULT.

DESCRIPTION. Oval, robust, brownish-red to blackish, thinly clothed with whitish pubescence, condensed on a medium line of the thorax and scutellum; elytra dark red, the denuded fascia and scutellar space darker. Antennal grooves directed against the eyes, funicle seven-jointed; antennae dull yellow, club darker. Beak longer than the head and thorax, slender, feebly curved, striate and punctate on the sides, carinate above. Thorax wider at the base than long, sides feebly rounded, narrowed towards the apex; disc densely and rather coarsely punctate. Elytra one-fourth wider at the base than the thorax, one-half longer than wide; striae rather deep, their punctures large, close set; intervals convex, finely punctulate. Ventral segments nearly equal, the third longer than the fourth; pygidium convex, not grooved. Front femora with one tooth, hind tibiae with a short spine at the tip, claws armed with an acute tooth. Length, 2-3 mm. (Adapted from Blatchley).

EMERGENCE IN SPRING AND HABITS. The weevils appear in strawberry fields in May, about the time the first buds are formed. Last spring they were first observed in the Vineland district on May 14th. At this time the buds of Senator Dunlap were in evidence, but the buds of Williams had not yet been produced.

The insects eat out holes in the buds and feed on the pollen within. Often several punctures are made in a single bud, so that when the blossom opens the petals present the appearance of having been shot full of holes. The weevils also feed on the stamens of open blossoms and occasionally they eat out holes in the foliage.

So far as we could judge strawberry weevil adults are capable of flying only a few feet.

EGG LAYING. In ovipositing the female chews a small hole through the bud, inserting the snout to the base. She then turns around, locates the puncture with her ovipositor, and deposits the egg within—usually among the stamens. In observing this process of oviposition we noted that sometimes two holes would be made, but that only one egg would be laid in the bud. After ovipositing the weevil crawls down the stem and cuts it, so that the bud either falls immediately, or, as is more commonly the case, is left hanging by a mere thread for a few days. The stem may be severed at the base of the bud, or further down. Infrequently the stem of the cluster may be severed.

In the field the adults were observed ovipositing first on strawberry, and later on blackberry and raspberry from May 14th to June 26th. However, it should be stated that by the time the raspberry buds appeared most of the adults had died.

The reproductive capacity of the female was not determined.

EFFECT OF COLD WEATHER ON THE WEEVIL. This spring it was observed that during the cold, wet spell of weather prior to May 19th, the weevils were comparatively inactive, and little injury was done to varieties such as Glen Mary, which were in full bud during that period.

THE EGG.

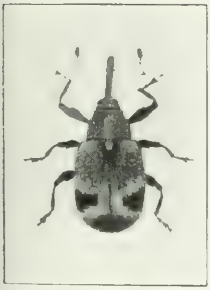
The egg is translucent, broadly oval, and is about 1/50″ in length. As previously stated, it is deposited within the bud and usually adheres to the stamens or pistils.

DURATION OF INCUBATION. In experiments with 100 eggs from May 28th to June 6th the duration of incubation varied from four to eight days, the average being six days.

MORTALITY. In experiments with 65 eggs from May 28th to May 31st the mortality was 14 or 21.4 per cent.

THE LARVA.

DESCRIPTION. Length, extended, slightly over 2-mm. Color, whitish-sulphurous, often mottled with blackish. Eyes sub-translucent, yellowish; mouth parts brown, lighter below. Thorax less roughened than the abdomen, of three distinct segments; narrow dorsal anterior margin of the first segment brownish. Legs wanting, but represented by six fleshy protuberances, each bearing three bristles, the middle one longer and slightly blackish; between the first pair of protuberances a narrow brownish stripe. Abdomen below more translucent, flattened, the sides produced slightly as a longitudinal fold. Above, the abdomen is deeply rugose; there are eight complete folds commencing at the lateral fold, each bearing two lateral, two sub-lateral and two dorsal hairs; between these, on each side a shorter fold, extending from the lateral fold to one-third the upper curve, and a second dorsal fold, commencing immediately before the dorsal termination of the lateral fold. The dorsal fold bears four hairs, the lateral, two. All the abdominal hairs are without color. Behind the thorax the abdomen is naturally curved beneath, so that the distal end rests below the thorax. Abdomen gradually tapering to the sub-apical segment, which bears the posterior respiratory organs beneath a sub-apical fold. Respiratory organs not at all projecting; a slender,



Adult of the Strawberry Weevil.

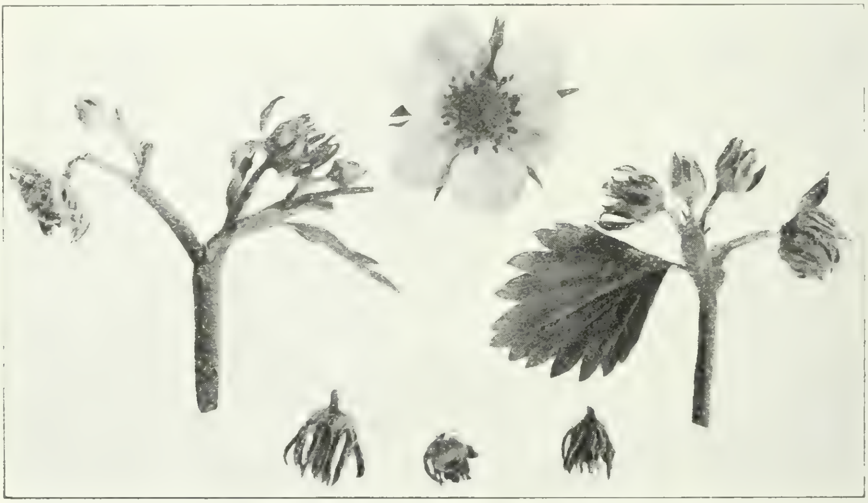
Strawberry bud opened to show egg of the Strawberry Weevil within.

brownish-yellow transverse line runs across them. Last segment tapering, subconical, on each side with a very narrow yellow longitudinal line, from the base to near the tip; the extreme tip yellowish.

Habits. Within the severed bud the larva at first feeds on the pollen. Pollen, however, is not absolutely necessary for its sustenance, as is shown by the fact that we reared a few adults from buds of Sample, a pistillate variety. The grub feeds on the other interior parts of the bud and eventually bores its way into the receptacle, forming here an enclosed cell, the entrance to which is plugged with closely packed excreta.

Effect on Larva of Drying Out of Bud. In cases where the buds persist on the plants or dry out on the soil, the majority of the larvæ die. Last season only 11 adults were reared from 180 dried out buds.

Duration of Larval Stage. The average duration of the larval stage of 96 grubs was 13 days, the maximum and minimum periods being respectively 16 and 11 days.



Work of Strawberry Weevil. Note the severed buds and punctured petals.

The Pupa.

Pupation takes place within the bud. The pupa is creamy white, sometimes mottled with black. All the appendages of the adult are apparent.

Duration of Pupal Stage. In experiments with 90 pupae the maximum, minimum and average periods of pupation were respectively, 18 days, 6 days and 10 days.

Further Notes on the Adults.

Emergence From Buds. According to observations made during the past two years the adults commence to emerge from the buds about June 20th, and continue to emerge throughout the greater part of July.

Habits and Food Plants. In the insectary the newly emerged adults fed very freely upon the leaves of strawberries. On some of the plants practically all the foliage was devoured—little more than the bare ribs being left. In the strawberry fields, however, very few beetles were found attacking the foliage, and no case of skeletonizing of the leaves was observed. Prior to July 14th the weevils were noticed only in strawberry patches. On that date, however, large numbers were found feeding on the flowers of milkweed (*Asclepias*) there being from twenty to seventy on each head. Later on the weevils were taken on the leaves of golden rod, and on the bloom of Canada Mint (*Mentha arvensis canadensis*), Catnip (*Nepeta cataria*), and Heal-all (*Prunella vulgaris*).

Slingerland and Crosby state that the weevil feeds on the flowers of wild bergamot (*Monarda fistulosa*) : and Dr. Hamilton* mentions that it was taken feeding on the leaves and flowers of basswood (*Tilia*).

Hibernation. The beetles apparently go into hibernation in mid-summer. After the second week in August we found no more weevils feeding on flowers, nor did we find out where the insects went. Rubbish and long grass in the neighborhood of strawberry fields were searched, but no weevils were located.

According to Slingerland and Crosby the insects hibernate "under rubbish, particularly in wood lots or hedgerows adjoining strawberry fields." In Minnesota the weevils have been found snuggled down about the base of strawberry plants, and in New Jersey they have been found in woodlands adjacent to strawberry fields resting upon the upright stems of a common moss.

Strawberry bud cut open to show the Strawberry Weevil grub feeding within.

Methods of Rearing.

Pill boxes were used for rearing the weevils from the egg to adult stage. A small amount of soil was placed in the box and kept slightly moist. Too much moisture, or too little, resulted in many cases in the death of the larvæ. The buds were secured in the field or from potted plants, and only buds which were observed being cut by the adults were used. In examining the bud, the sepals and petals were carefully raised, so as not to disturb the grub. It was found that this seldom resulted in any apparent injury to the grub, and it did not appear to deter its development. Where only the numbers developing from cut buds was desired, the buds were placed in a flower pot half filled with moist soil and covered with cheesecloth.

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* Can. Ent. XXIV., p. 41.

CONTROL.

The excellent results secured in New Jersey in the control of the strawberry weevil by the use of a dust preparation composed or powdered arsenate of lead and finely ground sulphur led us to give this remedy a trial. Two mixtures were tested (1) 100 sulphur, 20 arsenate of lead, and (2) 90 sulphur, 10 arsenate of lead.

Two strawberry fields at Oakville were treated by the junior writer, and one plantation at Vineland was dusted under our supervision. In addition to these a considerable number of strawberry patches in the Oakville and Niagara districts were treated by their owners. The applications were made by means of: (1) a Monarch duster, (2) a home-made twirler,* and some of the growers used cheesecloth bags.

The dust was applied, weather permitting, as soon as the weevils were found in large numbers. The Bartlett patch at Oakville, and part of the Church patch at Vineland, were dusted twice on account of the first application being washed off by rains, but all the others received only one application.

RESULTS.

W. BARTLETT, Oakville. The weevil has been injurious to Mr. Bartlett's strawberries for a number of years and this spring the adults were again very abundant in his patch and threatened to cause serious loss. The two dust mixtures mentioned above were tested and two applications were made.

RESULTS. No more than 5 per cent. of the buds in the whole patch were destroyed and Mr. Bartlett picked the largest crop of berries he had ever harvested. No marked difference was noted between the rows dusted with the 100:20 mixture and those with the 90:10.

As this was the main experimental patch we arranged to leave an adjoining berry patch untreated as a "check." However, Mr. Bartlett found the weevil hard at work in our "check" patch, and decided very suddenly that he was more interested in dollar and cent returns than in experiment results, and he gave what was to have been our "check" patch a heavy coat of dust.

R. BURTON, Oakville. Last year (1918) at least 75 per cent. of the buds were destroyed in Mr. Burton's two-acre patch of Glen Mary strawberries. The two dust mixtures were tested this year and only one application was made.

RESULTS. Here again there was no difference in the amount of injury between the rows dusted respectively with 100:20 and 90:10. Throughout the whole of the patch no more than 10 per cent. of the buds were destroyed, and at least half of this injury was done before the dust was applied.

It should be mentioned that in our estimation this particular experiment was of little value because in all cases which came under our observation this year, the variety, Glen Mary, escaped serious injury.

S. CHURCH, Vineland. Last year over 50 per cent. of the buds in Mr. Church's patch were destroyed, and this spring the weevils were present in large numbers. Several rows of early berries were dusted twice. However, the main patch of Williams only received one application. Only the one dust, the 90:10, was used.

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*The frame work of the holder was made of a wire ring 9"-10" in diameter and two bent wires crossed at right angles. This was lined with fine wire cloth, twenty or more meshes to the inch. A bent branch was used as a handle.

RESULTS. An insignificant percentage of the buds were destroyed in this patch and a splendid crop of berries was harvested—about 250 crates per acre. In a patch about ¼ mile from Mr. Church's at least 60 per cent. of the buds were destroyed by the weevil and the yield was only 100 crates per acre.

RESULTS IN OTHER STRAWBERRY PATCHES.

In every strawberry field where the dust was put on at the right time excellent control was obtained. All the growers who used the dust remedy expressed themselves as being well satisfied with the results.

INSECTS OF THE SEASON IN ONTARIO.

W. A. ROSS, DOMINION ENTOMOLOGICAL LABORATORY, VINELAND STATION, AND
L. CAESAR, ONTARIO AGRICULTURAL COLLEGE, GUELPH.

The past year was a notable one from the entomologist's point of view. The mild winter of 1918-19 and the hot, dry summer were very favourable to insect life, and consequently injurious insects of many kinds were numerous.

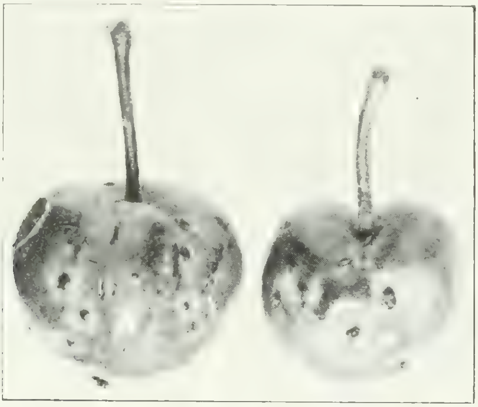

Fig. 1.—Young apples deformed by nymphs of the Mullein Leaf Bug (*Campyloma verbasci*).

ORCHARD INSECTS.

It is worth while noting here that the carefully and regularly sprayed apple orchards were practically the only ones which had crops of fruit this year.

CODLING MOTH (*Cydia pomonella*). This well-known pest was very much more abundant than usual and caused great loss in the warmer parts of the Province where the percentage of second brood is largest. Some unsprayed orchards in the Niagara District had almost every apple infested. Orchards, well sprayed this year, but which in preceding years had been neglected or poorly sprayed had as high as 50 per cent. "sideworm injury." On the other hand, orchards in districts that had been well sprayed for several years suffered little injury, thus showing the cumulative effects of good spraying.

CIGAR CASE-BEARER (*Coleophora fletcherella*). This species is usually of comparatively small importance, even in unsprayed orchards, but this year it was present in very large numbers and made the foliage of unsprayed trees very tattered and unsightly.

BUD MOTH (*Eucosma ocellana*). This species was somewhat more abundant than usual, especially in Norfolk County.

PEAR LEAF BLISTER MITE (*Eriophyes pyri*). This well-known pest has for several years been held in check by unknown natural factors, but during the past two years it has increased to a very marked extent in many orchards which have not been receiving the so-called dormant application of lime-sulphur. The present indications are that the blister mite will again have to be reckoned with as a first-class orchard pest.

THE MULLEIN LEAF BUG (*Campyloma verbasci*). A small mirid,* which occurs throughout the Province on mullein, catnip, potatoes and several other plants, was found attacking apples this year in two orchards in Norfolk County. Baldwin, Roxbury Russet and Spy were freely attacked and on a few of the infested trees 75 per cent or more of the apples were more or less injured by the bugs feeding on them. It was not uncommon to see one to seven of the little green nymphs on a single apple.

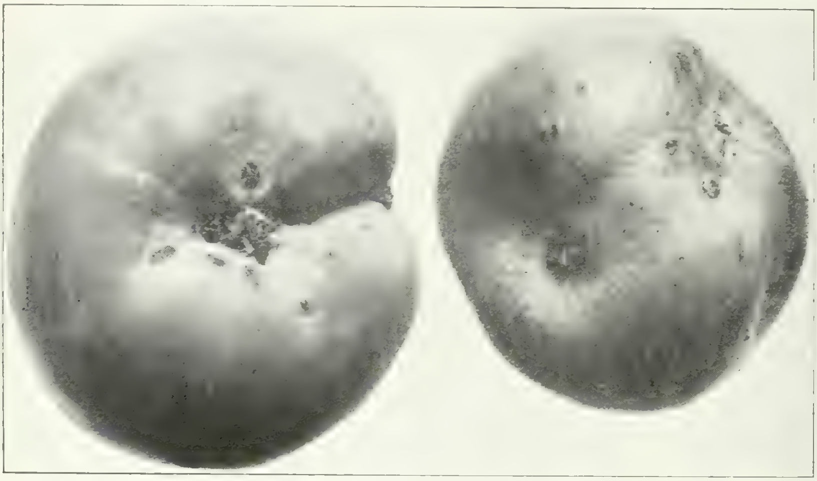

Fig. 2.—Mullein Leaf Bug injury on mature apples.

Conspicuous brown or sometimes blackish corky warts formed at the spots where the punctures were made. In most cases there was only one or two such scars to an apple; in others a ring of them almost encircled the apple; and in others several, close together on the one side, caused the fruit to be lopsided.

All the puncturing was done by the nymphs while the apples were still small —not more than one-half to two-thirds of an inch in diameter. (According to our observations, the adults do not attack the fruit but they do feed very freely upon the leaves and wood of the new growth, and are specially fond of the water-sprouts.)

The nymphs are light green in color and are very small, being, even in the last instar, only about 2 mm. in length. The adults vary in color from greenish to brown, and average about 3 mm. in length. The life history of this species was not worked out, but from the fact that on June 12th most of the nymphs were in the last instar and a few had transformed into adults it would appear that these must have hatched from the eggs, at the latest, by the time the blossoms appeared.

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*Species determined by E. P. Van Duzee.

At the time of picking it was found that most of the apples had almost completely outgrown the plant-bug injury save for small brown or blackish elevated scars on the surface. Badly punctured apples, however, were greatly deformed by the failure of the injured areas to grow. The percentage of blemished apples could not be determined because the fruit was thinned early in the season and the worst specimens picked off.

THE SAN JOSÉ SCALE (*Aspidiotus perniciosus*) has not yet regained the position it held prior to the winter of 1917-18. Both last year and this year it was difficult to find many badly infested trees. The insect, however, is gradually increasing in its old haunts—neglected orchards.

THE APPLE LEAF SEWER (*Ancylis nubeculana*) was present in most orchards this autumn in moderate numbers. It is usually a rare insect in Ontario.

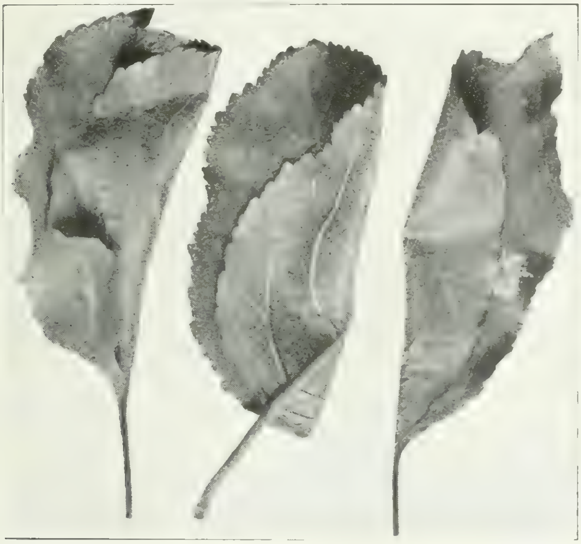

Fig. 3.—Apple leaves folded by the Apple Leaf Sewer.

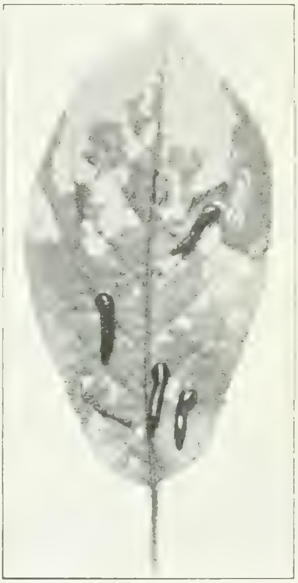

Fig. 4.—Pear Slugs skeletonizing cherry leaf.

LESSER APPLE WORM (*Enarmonia prunivora*) was, as last year, very scarce.

PEAR SLUG (*Eriocampoides limacina*). The outbreak of pear slug was repeated this year on an even larger scale than that of 1918. The foliage of thousands of pear and cherry trees throughout a large part of the Province was destroyed, and in the case of early Richmond cherries much of the fruit was rendered worthless. Just as last year, it was the first brood that did nearly all the damage. In a few localities the second brood larvæ were fairly numerous, but in most places they could scarcely be said to have done any injury worth mentioning. The eggs of the second brood were this year, as last, highly parasitized. A few parasites were reared also from the pupae.

ROSE CHAFER (*Macrodactylus subspinosus*). In June hordes of rose chafers appeared in the Simcoe and Fonthill sections and injured apples, grapes and cherries.

Tussock Moth (*Hemerocampa leucostigma*). As forecasted in last year's report, little or no injury was done by this species.

Fall Webworm (*Hyphantria cunea*). The unsightly webs of this species were again very conspicuous throughout the province. However, according to our observations the insect was not so abundant as it was last year.

Plum Curculio (*Conotrachelus nenuphar*). This species was unusually destructive in the Niagara District. It was especially injurious to peaches and was responsible for a large "drop." In a peach orchard at Winona over 50 per cent. of the crop was destroyed by it.

Unspotted Tentiform Leaf Miner (*Ornix geminatella*). This unimportant apple insect was common in some orchards in the Niagara District and Norfolk County.

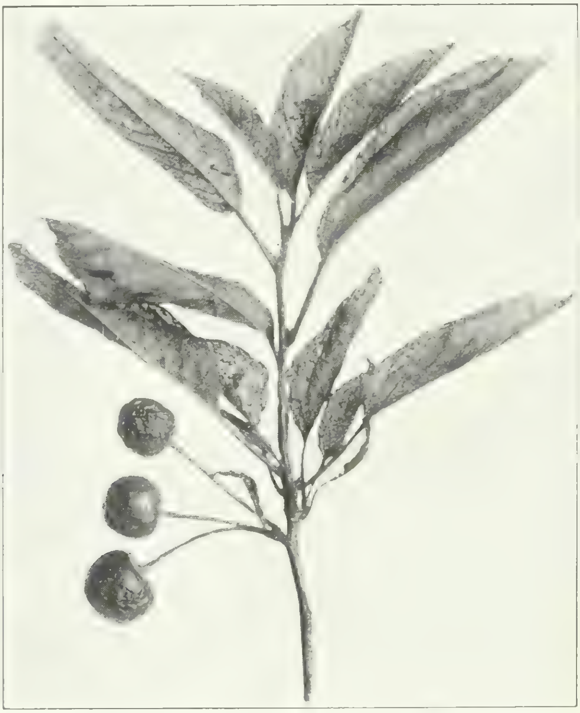

Fig. 5.—Cherry leaves and fruit injured by the Pear Slug. Note the wizened fruit.

Silver Leaf Mite (*Phyllocoptes schlechtendali*). Practically all the foliage in a block of seedling peaches at the Horticultural Experiment Station, Vineland, was affected with silver leaf. This same disease was quite common in other peach orchards in the Vineland district; and in every case we examined we found it was caused by the mite *Phyllocoptes*. It is of interest to note that according to our observations this mite hibernates under the protection of the bud scales and between the leaf petioles and the base of the bud.

Rose Leaf-hopper (*Empoa rosae*). In late summer and fall myriads of rose leaf-hoppers were present in many apple orchards in the Niagara District and Norfolk County and produced a characteristic mottling of the leaves. In a large infested orchard at Simcoe practically all the foliage became pallid and in the case of Greening trees the appearance of much of the fruit was spoiled by specks of excrement voided by the hoppers.

On October 17th large numbers of females were observed depositing their eggs on apple—in the bark of the smaller branches and twigs.

Apple Aphids. Exceptionally large numbers of recently hatched nymphs were observed in the spring in most sections of Ontario. Heavy washing rains and insect enemies, however, destroyed such a large percentage of the plant lice that no serious injury was effected.

Pear Thrips (*Taeniothrips inconsequens*). This pest was found only in the orchard in which it was taken last year, and here again it was present in very small numbers.

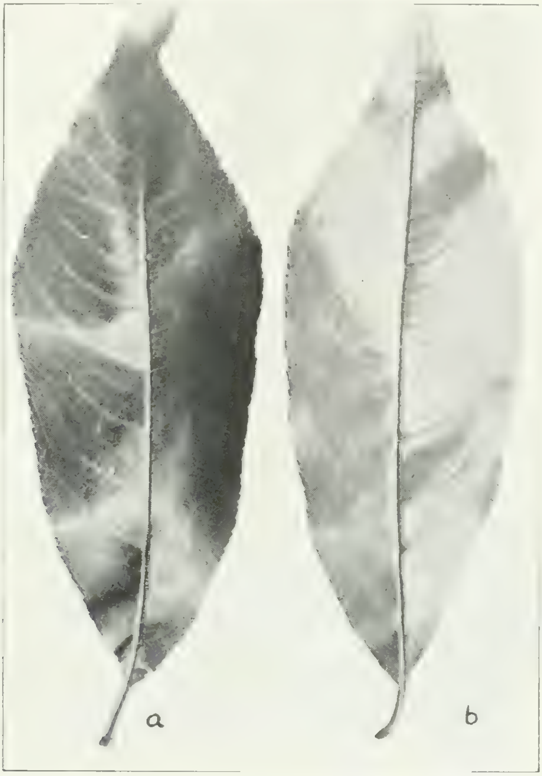

Fig. 6.—(*a*) A normal peach leaf contrasted with (*b*) a leaf injured by the Silver Leaf Mite.

Fulgorid on Pear (*Ormenis pruinosa*). In a Beamsville pear orchard large numbers of a fulgorid nymph pale green in colour and more or less covered with a white woolly material, were found about mid-July feeding on the water-sprouts. The species was reared and proved to be *Ormenis pruinosa*.

Insects Attacking Grapes and Small Fruits.

Grape Leaf-hopper (*Erythroneura comes*). In view of the abundance of various species of leaf hoppers, notably the rose leaf-hopper (*Empoa rosae*) and the potato leaf-hopper (*Empoasca mali*) it is of interest to note that the grape leaf-hopper was much less conspicuous than usual in vineyards in the Niaraga District.

Blackberry Leaf-miner (*Metallus bethunei*). This leaf-miner was again very destructive in blackberry plantations in the Burlington and Niagara districts. Egg and larval parasites were much more abundant than last year.

Strawberry Leaf-roller (*Ancylis camptana*). This species was apparently somewhat more general than last year but did comparatively little damage.

Imported Currant Worm (*Pteronus ribesii*). As usual, this sawfly did considerable damage to currants and gooseberries.

Strawberry Root Louse (*Aphis forbesi*). It is worth mentioning that this species, which is so destructive in Illinois and other parts of the United States, was found in small numbers in a strawberry plantation at Bismark.

Imported Currant Borer (*Sesia tipuliformis*). Adults of this species were very abundant about mid-June in some black currant plantations in the Niagara district.

Strawberry Root Borer (*Typophorus canellus*). Adults of this species were common in a strawberry patch at Oakville, but apart from eating out holes in the foliage the insects apparently caused no serious injury.

Raspberry Sawfly (*Monophadnus rubi*). This well-known pest of the raspberry was conspicuous by its absence.

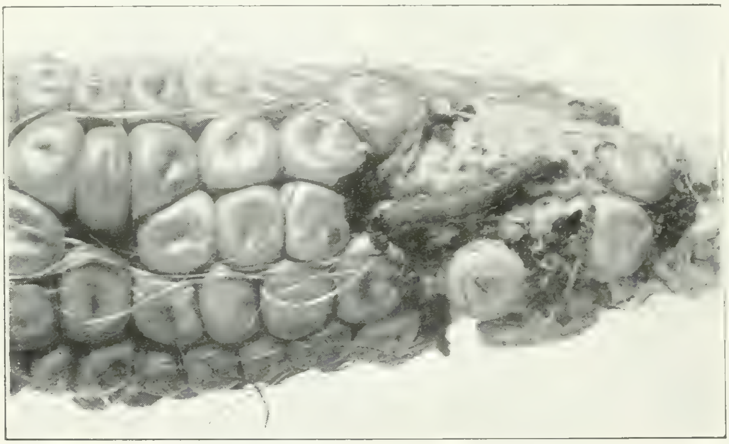

Fig. 7.—Corn Ear Worm and its work.

INSECTS ATTACKING VEGETABLES.

Cabbage Maggot (*Chortophila brassicae*). This insect varied greatly in numbers and destructiveness in the different districts. At Vineland, Burlington, Guelph, London and other parts of southern and western Ontario it did almost no harm except to radishes, but at Ottawa and to a lesser extent in Norfolk County it was abundant and destructive.

Onion Maggot (*Hylemia antiqua*). The onion maggot did much harm at Dixie and in several other localities, but at Burlington and Leamington, as last year, was not of much importance.

Imported Cabbage Worm (*Pieris rapae*). This insect caused much injury in cabbage and cauliflower fields all over the western and southwestern parts of the Province.

Diamond-Back Moth (*Plutella maculipennis*) was very conspicuous in fields of cabbage.

Corn Ear Worm (*Heliothis obsoleta*). This insect attacked the ears of sweet and field corn in many localities this fall. Infested ears were received by the writers from Welland, Lincoln, Wellington and Lambton Counties. Injury was practically confined to late planted corn. In Welland County it was observed that Dent corn was injured more than Flint.

Tomato or Tobacco Worm (*Phlegethontius quinquemaculata*). This species was present in exceptionally large numbers in tomato and tobacco fields in the Leamington district and other parts of western Ontario. It was also common in Norfolk County.

Pea Aphis (*Macrosiphum pisi*). This plant louse was again very destructive to peas grown for the canning factories in Prince Edward County and to a lesser extent in Norfolk County. Field peas were also injured in Lincoln County.

Cutworms. Quite a few complaints were received regarding cutworm injury to cabbage, tomato and corn. What we took to be the dingy cutworm *Feltia ducens* was injurious to cabbage at Vineland about mid-May. The variegated cutworm was moderately abundant throughout the Burlington district and was apparently the cause of most of the holes eaten in tomatoes in September.

Asparagus Beetles (*Crioceris asparagi and C. 12-punctata.*) The two species were very common and injurious in the Niagara district. At Vineland the chalcid parasite (*Tetrastichus asparagi*) was again observed.

Colorado Potato Beetle (*Leptinotarsa decemlineata*). The beetles came through the winter in large numbers and caused much damage early in the year to potatoes and tomatoes. According to reports received, the "Friendly Perillus" was unusually effective as a check.

Cabbage Aphis (*Aphis brassicae*). This louse was very abundant in late summer and fall on cabbage, cauliflower and turnips and caused considerable injury. However, due to the effective work of the parasitic and predaceous enemies, the outbreak did not reach the alarming proportions we anticipated. It is of interest to note that one of the most important insect checks of this species was the larva of *Aphidoletes fulva*.

Red Headed Flea-beetle (*Systena frontalis*). This species was unusually prevalent on beans.

Black Stink-bug (*Cosmopepla bimaculata*) was remarkably abundant this year on grains but so far as we could see caused no injury. Mr. MacLellan, Ontario Vegetable Specialist, reports that during the summer this species killed the tips of asparagus plants in a truck garden at London.

Potato Leaf-hopper (*Empoasca mali*) was remarkably abundant on potatoes and beans throughout the Province. It was generally credited with being responsible for all the leaf burn which was so prevalent on early potatoes. However, we are not at all sure that this claim was wholly correct.

In this connection the following preliminary experiments conducted at the Dominion Entomological Laboratory, Vineland Station, by Mr. Robinson are of interest. Three cheesecloth cages each large enough to cover three plants were put over potatoes growing in the field in June before there were any signs of leaf-burn. Large numbers of leaf-hoppers were introduced into two cages and the third was used as a check. None of the plants were watered. Tip-burn developed on the potatoes in all three cages, and, strange to say, just as rapidly on the check plants as on the infested ones. These experiments were duplicated in the insectary with potted potato plants which were kept well watered. Here the results were quite different: leaf-burn developed on the infested plants whereas the check (one plant) showed no indications of it at all. The interpretation of these results would appear to be that two factors caused the leaf-burn this year, namely the drought (probably the more important) and the leaf-hopper.

ONION THRIPS (*Thrips tabaci*). This pest exacted a very heavy toll this year from the truck gardeners of Ontario. In the counties of Kent and Essex the thrips, aided by the hot, dry weather, reduced the onion crop to one-third of a normal yield.

TARNISHED PLANT BUG (*Lygus pratensis*). This well known bug was present in exceptionally large numbers this year and caused a considerable amount of damage especially in gardens. Asters and dahlias were attacked so freely that in many sections they were a complete failure. At the Dale Estate, Brampton, only about one thousand flowers were cut from twenty thousand plants. At Kingston spinach grown for seed was injured to such an extent that the plants failed to produce any seed. Plant bug injury, in the form of blasted compound leaves was common in potato fields. The black joint disease of celery caused by the bugs feeding at the joints was prevalent throughout the province. It should be mentioned here that Mr. MacLennan, Ontario Vegetable Specialist, is positive that the tarnished plant bug is the chief agent concerned with the spread of bacterial soft rot or black heart of celery.

POTATO FLEA-BEETLE (*Epitrix cucumeris*). In June this species and its work were conspicuous in potato patches in the Niagara district. It was also injurious to tomatoes.

THE THREE-LINED LEAF-BEETLE (*Lema trilineata*) was unusually common on potatoes in the Niagara peninsula.

THE STRIPED CUCUMBER BEETLE (*Diabrotica vittata*) occurred in more than usual numbers in parts of Norfolk County, but around Burlington and in many other localities it was scarce.

INSECTS ATTACKING FIELD CROPS.

CLOVER LEAF WEEVIL (*Phytonomus punctatus*). The larvæ of this pest occurred in exceptionally large numbers in parts of the Niagara peninsula and southwestern Ontario. In Norfolk County a whole field of clover was ruined. However, in most fields serious injury was prevented by the almost complete destruction of the grubs by a fungus disease.

CHINCH BUG (*Blissus leucopterus*). The chinch bug appeared in large numbers this summer in Gainsboro' Township, Lincoln County, and caused a considerable amount of alarm among the farmers. The centre of infestation was at the village of Bismark and the infested area extended, roughly speaking, about two miles around the village. Meadow grasses, particularly timothy, were in some instances killed outright. Oats were injured to a considerable extent. One six-acre field was completely destroyed and in another field a strip about the width of a drill was also killed outright. However, as a general rule the infested oats did not die but ripened prematurely and produced little or no grain. Some damage was also done to corn.

Late in September we found large numbers of the adults destroyed by the chinch bug fungus (*Sporotrichum globuliferum*). The percentage of mortality varied from 25 per cent. to 75 per cent. in the fields examined.

We hope and expect that the wet weather we have had this fall along with the coming winter will reduce the hibernating adults to insignificant proportions.

CRAMBID ATTACKING WHEAT (*Crambus caliginosellus*).* In the seven-acre field of wheat in Wainfleet Township, Welland County, over 60 per cent. of the wheat was destroyed by a crambid or sod-worm. Because of the very wet spring this particular field was not worked until August and as a result had been covered with weeds and grasses most of the year. One-half of the field was ploughed about August 1st. This part was not seriously injured. The other half was not ploughed until the middle of August and in this the wheat was so badly damaged that it had to be resown.

CLOVER SEED CHALCIS (*Bruchophagus funebris*). Judging from samples of seed sent in last winter from Kent County, this insect must have been very abundant there in 1918. One correspondent claimed that much of the seed produced in Kent County was destroyed by this tiny insect.

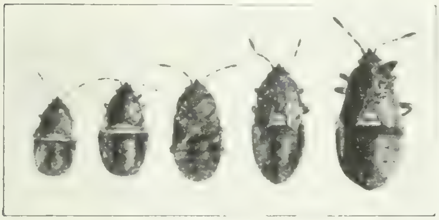

Fig. 8.—Nymphs of Chinch Bug (much enlarged).

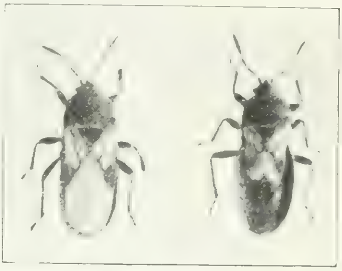

Fig. 9.—Showing the long-winged and short-winged forms of the Chinch Bug adult.

GLASSY CUTWORM (*Sidemia devastatrix*). This cutworm caused some alarm in Middlesex County in mid-June by cutting off wheat plants. The total loss, however, was not great.

HESSIAN FLY (*Mayetiola destructor*). So far as observed, this insect did not cause any appreciable injury in any district. In several fields approximately 5 per cent. of the plants were attacked.

MISCELLANEOUS.

WARBLE FLIES (*Hypoderma bovis* and *H. lineatum*) threatened to be very numerous judging by the great numbers of warbles seen on the backs of cattle in the spring. Fortunately the danger so far, at least, as the heel fly was concerned did not materialize, and very few complaints of cattle gadding were received.

SPRUCE GALL LICE (*Chermes abietis* and *C. similis*). Galls caused by these insects were somewhat more conspicuous than they have been for several years. There are evidently powerful natural factors keeping these insects under control.

GRASSHOPPERS. Few complaints were received regarding grasshoppers or locusts. In the Smithville district, however, these pests were more abundant than they had been for many years. Garden crops, alfalfa and oats were very freely attacked.

COTTON WORM (*Alabama argillacea*). Moths of this species visited many parts of Ontario this autumn and attracted considerable attention.

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*Species determined by Dr. McDunnough.

Rose Midge (*Dasyneura rhodophaga*). We regret to report that this destructive midge has made further inroads into Ontario. It is now present in six large greenhouses: three in Toronto, one at Grimsby, one at Port Dover, and in the large Dale Estate at Brampton. In every instance the pest was brought in on rose stock imported from the United States.

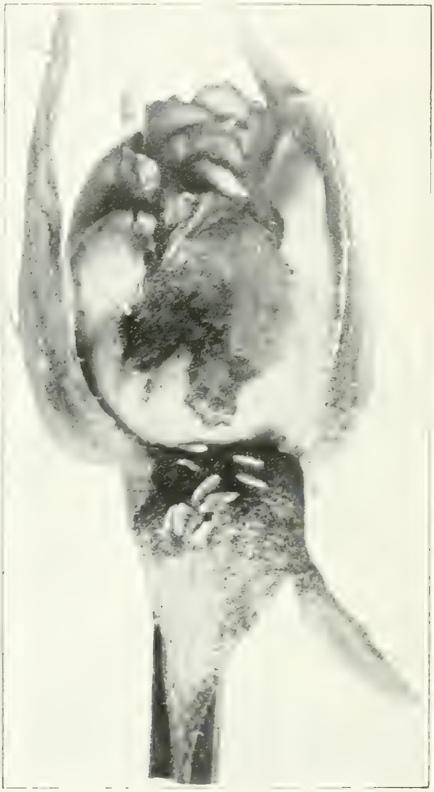


Fig. 10.—Injured rose bud opened to show Rose Midge maggots feeding within. (Enlarged three times.)

Trumpet Vine Midge (*Itonida tecomiae*). During the past two years trumpet vines at Guelph have been seriously injured by a white cecidomyiid larva which curls and distorts the leaves. Badly infested leaves turn brown and die and in this way much of the young growth may be destroyed. We reared the adult and the species was determined by Dr. E. P. Felt, as *Itonida tecomiae* Felt.

REMARKS ON THE ANCESTRY OF INSECTS AND THEIR ALLIES.

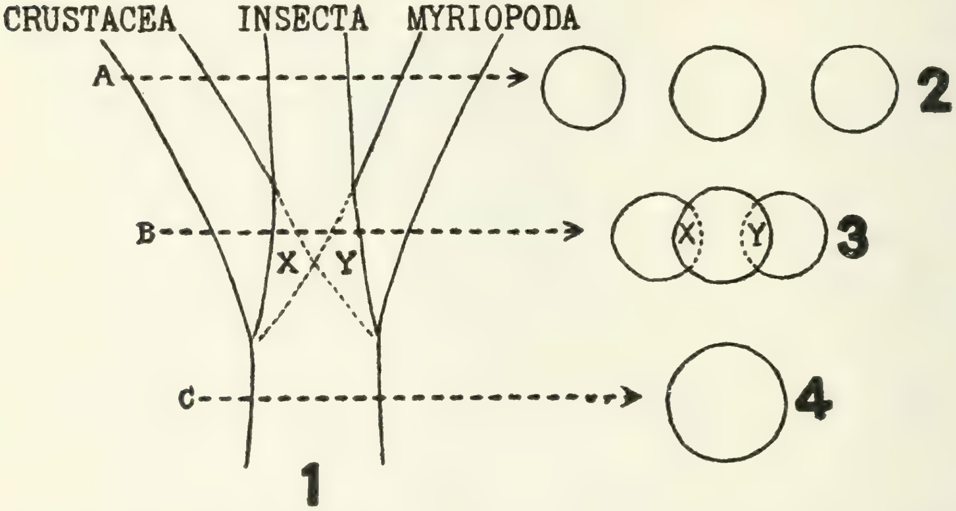
G. C. Crampton, Massachusetts Agricultural College.

It has been a matter of considerable surprise that so much time and attention have been expended upon the subject of the evolution of mammals, reptiles, and other vertebrates, to the practical exclusion of the consideration of the development of the lines of descent of the insects, Crustacea, "Myriopoda," and other arthropods, especially since the study of the latter forms involves no great outlay in the matter of collecting expeditions, equipment, housing facilities, etc., as is the case with the study of the vertebrate groups. In fact, the arthropods offer unrivaled opportunities for the study of evolution, including, as they do, the greatest number of species of living things, as well as a marvellous range of modifications in adaptation to varied environmental conditions, and a height of development of the psychic faculties (social instincts, etc.) unapproached elsewhere save in the group Mammalia. In addition to these advantages, the ease with which many of them can be obtained, and the fact that no elaborate equipment or technique is necessary for studying their external anatomy brings the group within the reach of practically everyone, and it is most earnestly to be hoped that so fertile a field for research will soon attract a number of investigators commensurate with its great possibilities and its importance from the standpoint of evolution.

Not only has this potentially rich field of research been sadly neglected, but even the meagre investigations which I was able to carry out during the past summer very quickly demonstrated that the prevalent conceptions concerning the meaning of the parts in insects (as interpreted from the standpoint of a comparison with the structures of Crustacea and other arthropods) are in many cases wholly erroneous. Thus the oft repeated statement that the "superlinguae" or "paraglossae" on either side of the hypopharynx of insects represent the first maxillae or "maxillulae" of insects is quite wrong, since the structures in question clearly correspond to the so-called paragnaths or structures on either side of the median ridge (corresponding to the hypopharynx or tongue of insects) in the mouth region of certain Crustacea—and the "superlinguae" or "paraglossae" therefore cannot be regarded as the appendages of a distinct "superlingual" segment in insects, as Folsom has claimed is the case in these forms. The investigations of all embryologists other than Folsom have clearly shown that the "superlinguae" are not appendages of a distinct segment; but practically all recent entomologists have been led astray in a matter which could easily have been righted had they but taken the trouble to examine the corresponding parts in the lower insects and Crustacea. Furthermore, a study of the Crustacea clearly demonstrates that the first maxillae of insects correspond to the first maxillae of Crustacea, while the second maxillae of insects (i.e. the halves of the labium) correspond to the second maxillae of Crustacea, and the head of an insect is therefore comprised of but six (not seven) segments, as embryology has long indicated to be the case.

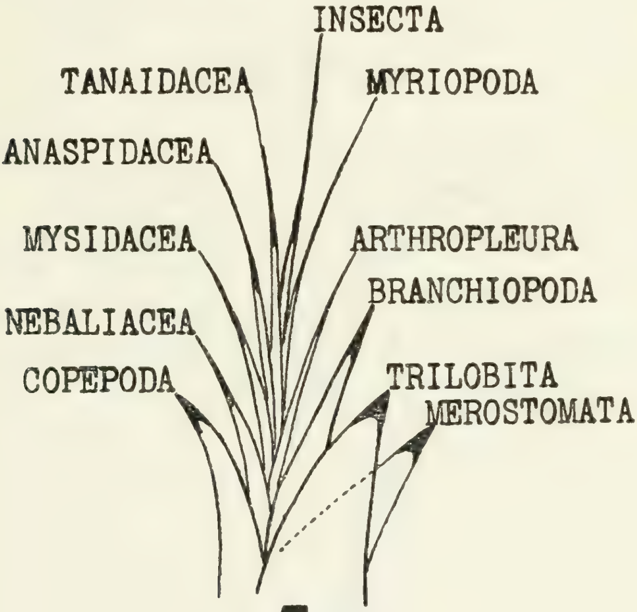
The statement that the parts of an insect's mandible are comparable to the parts of the maxillae, which has received universal acceptance in the textbooks dealing with the subject, is at once seen to be impossible when one compares a series of crustacean mandibles with those of insects, since such a comparison very clearly shows that the insect's mandible represents the *basal segment alone* of the corresponding appendage in the Crustacea, while the maxillary galea and lacinia represent processes of *two* distinct basal segments of an appendage, whose terminal portion forms the palpus of the maxilla. Furthermore, a comparison with the parts of the Crustacea very clearly shows that the universally accepted opinion that an insect's maxilla represents a "biramous" appendage is wholly false (the galea and lacinia being merely processes of two basal segments of an appendage whose endopodite alone forms the maxillary palpus), and the attempt on the part of several investigators to compare parts of an insect's mandible (as well as the parts of the maxillae) to the endopodite and exopodite of a crustacean appendage would never have been made if they had but taken the trouble to compare a series of crustacean mandibles with those of insects.

Since the second maxillae of Crustacea are homologous with the second maxillae of insects, which unite to form the labium in the latter forms, it is impossible to homologize the united poison claws of chilopods (which represent the first maxillipedes of Crustacea, and therefore occur behind the second maxillae) with the second maxillae or labium of insects, as many investigators have sought to do, and the erroneous claim that the underlip (united first maxillae) of diplopods is formed by the fusion of two pairs of appendages, is seen to be untenable when one compares the structures in question with the underlip of certain isopods (which here, however, is formed by the united first maxillipedes) in which the corresponding parts are clearly seen to belong to but *one* pair of appendages, as embryology has shown to be the case all along, although most anatomists have totally disregarded its evidence.



From a comparison with the parts in the Tanaidacea and other Crustacea the cerci of insects are seen to represent one of the rami of the uropods on either side of the telson, and the meaning of the styli attached to the basal segments of the abdominal limbs of the Machilidae and other primitive insects is at once apparent when one examines the reduced abdominal appendages of the Isopoda and other Crustacea. Indeed, the study of the parts in the Crustacea has furnished the key for the interpretation of the corresponding parts in insects in practically every instance, as I am hoping to show in a series of articles soon to be published upon the subject, and these facts are referred to at this point merely to show that a study of this most promising field has been grossly neglected, and even the few observations which have been made are for the most part badly in need of revision!

Despite Handlirsch's claim to the contrary (and his opinion has gained a surprisingly wide acceptance among recent writers), a comparison with the Crustacea and "Myriopoda" should convince anyone that the Apterygota rather than the winged insects, are the most primitive representatives of the class Insecta, and by no possible stretch of the imagination can the Apterygota be regarded as degenerate winged forms, as Handlirsch would have us believe! Instead of upholding Handlirsch's fantastic view that winged insects can be directly derived from Trilobites without the intervention of apterygotan forms, and a long series of intermediate stages, a comparison of the parts in insects, "Myriopoda," Crustacea, Trilobita, and the Merostomata, would clearly indicate that between the type of mouthparts, head capsule, and other structures found in the Trilobita, and those of even the most primitive representatives of the group Insecta, there must have occurred a long series of intermediate stages leading through the lower Crustacea, the lower Malacostraca, and the ancestors of the higher Crustacea (i.e. Isopoda, Tanaidacea, etc.) before the insectan types of structures were developed; and one cannot help but suspect that Handlirsch and his followers are either wholly ignorant of the absolutely obvious and patent evidence afforded by a study of the parts in the Crustacea and their allies, or they have deliberately ignored the tremendous array of facts whose evidence should have convinced them of the error of their contentions.



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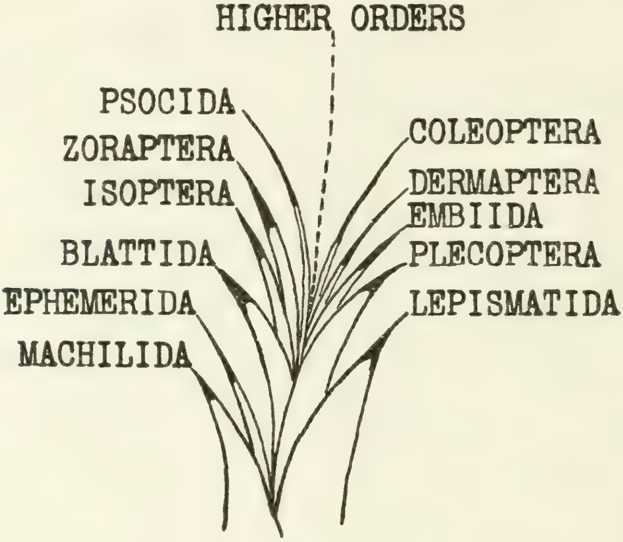
It is the fashion nowadays to consider the "Myriopoda" as the nearest representatives of the common ancestors of pterygotan and apterygotan insects; but here again, a comparative study of the structures in the Crustacea and certain of the Apterygota such as *Machilis* and *Lepisma* should have been made before such a view was promulgated, for such a study clearly indicates that the lines of development lead from the common ancestors of the isopods, Tanaidacea, Cumacea, and other Crustacea, through those of the Machilidae and Lepismatidae to the ancestors of the most primitive representatives of the winged insects such as the mayflies (Ephemerida) and stoneflies (Plecoptera). The structural resemblance between the mayflies and the Machilidae, or that between the Plecoptera and the Lepismatidae, is most striking, and the lines of descent of the Machilidae and Lepismatidae clearly lead back to Crustacea-like, rather than to "Myriopod"-like ancestors. It must be admitted, however, that certain other apterygotan insects such as the Campodeidae, Protura, etc., are extremely closely related to certain "Myriopoda" such as *Scolopendrella, Pauropus,* etc., but the lines of descent of these forms appear to represent merely side issues of the main trunk which leads to the evolution of the pterygotan insects (unless such insects as *Campodea, Japyx,* and other insects of the apterygotan order Rhabdura, are near the forms giving rise to the line of development of the pterygotan order Dermaptera, as I formerly held to be the case—but a further study of the insects in question has tended to discredit this view).



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Although the main lines of descent of the pterygotan insects appear to avoid the "myriopodan" side of the ancestry of insects and to lead back more directly to Crustacea-like forms through ancestors resembling the Machilidae and Lepismatidae, the dual relationship of apterygotan insects to the "Myriopoda" as well as to the Crustacea, cannot be ignored. This dual relationship is expressed graphically in Fig.1. As is shown in the figure, the lines of descent of the "Myriopoda," Insecta, and higher Crustacea (Isopoda, Tanaidacea, Cumacea, etc.) taken at the level "A," are quite distinct (as is represented by cross sections of these lines of descent shown in Fig. 2); but at the level "B," where the lines of descent begin to converge as they approach their common source, it is evident that the members of the three groups come very close together, and those insects occupying the "hereditary area" labeled "X" in Fig. 1, would naturally be expected to resemble the Crustacea quite closely, since the territory which they occupy is contiguous to that of the higher Crustacea. Similarly, those insects which occupy the "hereditary area" labeled "Y," would greatly resemble the "Myriopoda," since the territory which they occupy is contiguous to that of the "Myriopoda." Cross sections of the three lines of descent at the level "B" would be represented as three intersecting circles (Fig. 3), each of which, taken separately, demarks a distinct group (Crustacea, Insecta and Myriopoda); but the intersecting circles have a certain amount of territory in common, and those insects in the area labeled "X" (Fig. 3) being next to the Crustacea, would naturally have much in common with the Crustacea (left hand circle), while those insects in the area labeled "Y" being next to the "Myriopoda" (right hand circle) would naturally have much in common with the "Myriopoda." If we trace the lines of descent back to the level "C" (Fig. 1) they are seen to merge in a common "crustaceoid" ancestry; and a cross section at this level would represent the circles as completely coinciding (Fig. 4). It is thus readily comprehensible that there may be a dual relationship between the Insecta and higher Crustacea, on the one hand, and between the Insecta and the "Myriopoda" on the other—as we are forced to conclude is the case, from a study of the anatomy and embryology of the forms in question. This may indicate that the group Insecta is a polyphyletic one, and although I have been loath to accept this view, I can see no escape from the conclusion that insects are very closely related to both the higher Crustacea (Isopoda, Tanaidacea, Cumacea, etc.) and the "Myriopoda."

Since it is quite evident that the lines of descent of the higher Crustacea, Insecta, and "Myriopoda" soon merge in a common ancestry, the question naturally arises as to what these common ancestors were like. That these common ancestors were all of one type is out of the question, for they apparently differed among themselves as much as the Mysidacea, Anaspidacea and other "intermediate Malacostraca" (possibly including Arthropleura also) differ among themselves; and these common ancestors probably resembled all of the forms just mentioned (i.e. the Mysidacea, Anaspidacea, etc.), though it is possible that the Cumacea and Tanaidacea are more like the *immediate* ancestors of insects than are the Mysidacea, Anaspidacea, etc., which are more like their *remote* ancestors.

The Anaspidacea, Mysidacea, and other "intermediate Malacostraca" are in turn derived from ancestors resembling the Nabaliacea and other primitive Malacostraca, and the lines of development of the malacostracan Crustacea have undoubtedly accompanied those of the insects and "myriopods" more closely and for a longer distance than any other forms have done. The primitive malacostracan Crustacea such as *Nebalia* and its allies, exhibit undoubted affinities with the Branchiopoda and Copepoda, and to some extent with the Trilobita also, and they have even preserved some ancestral features in common with the Merostomata, although the latter forms lead off toward the lines of development of the Arachnoidea, and away from the lines of development of the higher Crustacea, Insecta, and "Myriopoda."

The question as to which arthropods have departed the least from the common ancestors of the phylum Arthropoda is an extremely difficult one to answer. The Copepoda, Branchiopoda and Trilobita are among the most primitive known arthropods, and it is quite probable that the first representatives of the group combined in themselves characters common to all three. Thus, for example, the earliest arthropods were in all probability not trilobites alone, but were doubtless trilobite-branchiopods, trilobite-copepods, etc., having many features in common with all three of these primitive groups, though in many respects the Trilobita have departed as little as any known forms from the ancestral type. It is thus necessary to make composites combining the primitive characters occurring in all of these primitive groups in order to come to the correct conclusion concerning the character of the ancestral arthropods. The Merostomata have also retained many features which must have been present in the ancestral arthropods; but their lines of descent (which apparently sprang from ancestors resembling the Trilobita) lead off toward the arachnoids, which lie in a side line having no direct bearing on the origin of the insectan and myriopodan type of arthropod. The ancestors of the arthropods themselves were in all probability very much like annelid worms, though other forms such as the Onychophora, etc., have retained many features characteristic of the ancestors of the phylum Arthropoda; but a discussion of these forms has no particular bearing upon the question of the nature of the more immediate ancestors of the higher Crustacea, Insecta, and "Myriopoda," and they need not be further considered here. It may be of some interest, however, to indicate briefly the principle lines of descent of the more primitive representatives of the class Insecta, and I have therefore included a diagram giving the lines of descent of those forms which have departed the least from the types ancestral to the higher groups of insects, although, as is also the case with the diagram of the lines of descent of the arthropodan allies of insects, it has been necessary to omit many important groups in order not to make the diagrams too cumbersome and intricate for practical purposes.

LATER DEVELOPMENTS IN THE EUROPEAN CORN BORER SITUATION.

E. P. Felt, State Entomologist of New York.

The last two months have witnessed a considerable extension of infested territory, the most significant being the area in Erie and Chautauqua Counties, New York, some twenty-five miles long, extending from Angola to Fredonia and with a known maximum width of ten miles. There is in addition a small infestation at North Girard, Erie County, Pennsylvania, and the probabilities are that the New York and Pennsylvania areas may be connected by a sparse infestation. In fact, the early corn planted on the light soil south of the lake is a suspicious area and it is impossible at the present time to define closely the extent of the infested territory in this section.

Explorations in the vicinity of the Schenectady area tend to confirm in a general way at least the limits established during the summer. The infestation in Massachusetts and New Hampshire has already been described in detail and requires no further comment at the present time.

A most significant development has been the failure of the European corn borer to produce two broods in the infested area in New York State. This means a very material reduction in the possibilities of injury and it is gratifying to state that in the earlier discovered Schenectady area, a section thoroughly cleaned up last spring, the maximum injury has hardly overrun one per cent. in a few very restricted areas, possibly amounting to five per cent. It is considered advisable for the present to content ourselves with the statement that but one generation developed last year since there is a possibility, perhaps very remote, that two generations may occur in this area during certain seasons and this condition may, after all, prove to be the normal.

The decidedly disturbing feature is the very sparse, inconspicuous character of the infestation in the western part of the state, a section where the insect has bred in a few localities at least for two seasons. The infestation was brought to the attention of Cornell University authorities through the accidental discovery of a few borers in a stalk, although a farmer in that vicinity had noted the injury the preceding season but had failed to appreciate its significance. In most of the territory, however, a very close examination is necessary to find the borer and these conditions suggest the comparative inefficiency of publicity measures and the great difficulty of organizing a sufficiently thorough scout of the corn fields of America to determine with a reasonable degree of accuracy the limits of the present infested areas.

We have yet to find unquestioned evidence as to the agencies producing these isolated infestations. It looks very much as though railway lines were an important factor, possibly in carrying the moths, since both the eastern and western areas in New York State have good railway connections with the older infested area in Massachusetts.

The occurrence of but one brood in the cooler corn-producing areas of New York State, even if this be normal, cannot be construed as being true of our great southern and warmer corn belt. The sparsely infested areas must be regarded as a real menace to much of the corn crop of America. The most practical method of handling the situation appears to be pushing the publicity campaign as far as practical, systematic scouting of the more suspicious areas so far as they can be determined and a comprehensive campaign of control designed specially to check spread until the economic status of the borer can be determined in this country.

THE ENTOMOLOGICAL RECORD, 1919.

ARTHUR GIBSON AND NORMAN CRIDDLE, ENTOMOLOGICAL BRANCH,
DOMINION DEPARTMENT OF AGRICULTURE.

The collecting season of 1919 does not appear to have provided any marked variation from the preceding year. In the Middle West a continuation of the drought in southern sections was especially favourable to the development of dry-loving insects, more notably Orthoptera, which in some parts increased to injurious numbers. Somewhat similar conditions prevailed in British Columbia and probably to a lesser extent in Ontario. Collecting, generally, was reported to have been good during the first part of the season but later became less so. It is gratifying to report that more attention is being devoted to hitherto neglected orders; as a result a far broader knowledge of the distribution of Canadian insects is being obtained.

During 1919, students of insects in Canada, have, as in previous years, been much assisted in their studies by various specialists, particularly those resident in the United States. To all who have assisted us, we extend our grateful thanks.

LITERATURE.

Among the publications which have appeared during 1919, the following are of interest to Canadian students.

BOWMAN, KENNETH. Annotated Check List of the Macrolepidoptera of Alberta. Published by the Alberta Natural History Society, Red Deer, Alta., 16 pp., February, 1919. In the preparation of this list the author has "endeavoured to provide an epitome of what has been accomplished by students of this order within the province to date, as an aid, not only to present workers but those who will follow after." We were very glad indeed to receive this list. It is a very useful contribution.

CANADIAN ARCTIC EXPEDITION (1913-1918) INSECT REPORTS. These reports on the insects of the various orders collected by members of the expedition were published in 1919, with the exception of the one on the Lepidoptera which was issued early in January, 1920. They comprise Vol. III of the Report of the Canadian Arctic Expedition. Ottawa: J. de Labroquerie Tache, Printer to the King's Most Excellent Majesty.

Part A: COLLEMBOLA, by Justus W. Folsom, 29 pp., 8 plates. Twelve species are discussed, three of which are described as new. The plates illustrate structural characters.

Part B: NEUROPTEROID INSECTS, by Nathan Banks, 5 pages, 1 plate. Five species are definitely determined, two of which are described as new. Two additional generic determinations are given. The plate illustrates genitalia of the two new species and views of other male characters.

Part C: DIPTERA, 90 pp. Crane flies, by C. P. Alexander; Mosquitoes by H. G. Dyar, and other Diptera by J. R. Malloch. In the first portion on the Tipulidae, sixteen species are reported upon. Of these, thirteen are new. The six plates accompanying the section, illustrate wings, antennae and other structures. The mosquitoes represented three species one of which only is definitely determined and this is described as new. The third section reporting upon other Diptera collected, comprises pages 34 to 90, (10 plates). The number of species listed is ninety-three.

representing fifty-five genera. Thirty-two new species are described and one new variety. The plates show various structural characters.

Part D: MALLOPHAGA, 12 pp., by A. W. Baker; ANOPLURA, by G. F. Ferris and G. H. F. Nuttall. Sixteen species are recognized in the former paper. One plate illustrates four species. In the latter contribution three species are listed.

Part E: COLEOPTERA, 27 pp. Forest Insects, including Ipidae, Cerambycidae and Buprestidae, by J. M. Swaine; Carabidae and Silphidae, by H. C. Fall; Coccinellidae, Elateridae, Chrysomelidae and Rhynchophora (excluding Ipidae), by C. W. Leng; Dytiscidae, by J. D. Sherman, Jr. In this part sixty species are determined, four of which are described as new. Three plates showing ipid beetles and their work, illustrate Dr. Swaine's section.

Part F: HEMIPTERA, 5 pp., by Edward P. Van Duzee. Six species are definitely recognized, one of which is described as new. Generic determinations of five other species are given.

Part G: HYMENOPTERA and PLANT GALLS, 38 pp. Sawflies—Tenthredinoidea, by Alex. D. MacGillivray; Parasitic Hymenoptera, Chas. T. Brues; Wasps and Bees, F. W. L. Sladen; Plant Galls, E. P. Felt. In this part, records of thirty-five species are included; others have been determined generically. Of the thirty-five species, twenty-one, mostly sawflies, are described as new. Two plates illustrate the eighth ventral segment in the males of four species of *Bombus*.

Part H: SPIDERS, by J. H. Emerton; ACARINA, by N. Banks; CHILOPODA, by Ralph V. Chamberlin; 22 pp. Twelve species of spiders are recorded, three of which are described as new. Two plates show structural characters. The Acarina collected include seventeen species, all but one previously known. Only two species of Chilopods were represented in the material secured by the expedition. A new species of *Ethpolys* from Washington and Oregon States, as well as a sub-species of this new species, the former from Alaska, are also described by Mr. Chamberlin.

Part I: LEPIDOPTERA, by Arthur Gibson, 58 pp., 6 plates. In this report is also included notes on other species collected in Arctic America, not met with by members of the expedition, all of which material is in the National Collection of Insects at Ottawa. Altogether notes and records of ninety-seven species are included, nine of which are described as new species. In addition, two new varieties are recognized. Plate i shows genitalia of species of Oeneis; ii, undersides of nine examples and underside of one, of species of the same genus. Plates iii, iv and v, the latter two coloured, illustrate a number of the rarer and new species collected by the expedition, of the genera *Pieris*, *Erebia*, *Brenthis*, *Eurymus*, *Oeneis*, etc.

EMERTON, J. H. Catalogue of the Spiders of Canada, known to the year 1919. Trans. Royal Canadian Institute, Toronto, 1919. This catalogue which contains the names of 342 species of spiders which have been found in Canada will be of considerable interest and value to those persons who are collecting these creatures in Canada.

FALL, H.C. The North American Species of Coelambus. Published by John D. Sherman, Jr., 1919. This pamphlet of 20 pp. includes several Canadian records. Twelve new species are described, three of which are from Western Canada.

HART, CHARLES ARTHUR. The Pentatomoidea of Illinois with keys to the Nearctic Genera. Division of Natural History Survey, Vol. XIII, Article VII, pp. 157-223. This contribution will undoubtedly be of value to our students of Hemiptera. Keys to families, sub-families, tribes, genera and species are given, Notes and distribution records are included of each species. Five plates illustrate structural differences, and one plate shows typical Pentatomoidea.

Lochhead, Wm. Class Book of Economic Entomology, with special reference to the economic insects of the Northern United States and Canada. Philadelphia: P. Blakeston's Son & Co., 436 pp., 257 illustrations, price $2.50. This volume is a companion to Reese's book on Economic Zoology. It is divided into four parts: Part I discusses the structure, growth and economics of insects; Part II the identification of insects injurious to farm, garden and orchard crops, etc.; Part III the classification and description of common insects; Part IV the control of injurious insects. This new volume will certainly find a useful place among economic workers.

Washburn, F. L. Injurious Insects and Useful Birds. J. B. Lippincott Company, Philadelphia; 414 illustrations in text and four coloured plates. A useful work of reference, the result of 21 years of work in entomology on the part of the author. Chapters I to VI deal with the losses to agriculture due to insects and rodents, etc.; Chapters VII to XVIII discuss insects affecting the various crops; chapter XIX, "Our Insect Friends"; XX, "The Relation of Birds to Agriculture" and XXI, "Some Four-footed Pests of the Farm," completes the volume.

NOTES OF CAPTURES.

Species preceded by an asterisk (*) described during 1919.

Lepidoptera.

(Arranged according to Barnes and McDunnough's Check List of the Lepidoptera of North America).

Pieridæ.

33. *Pieris occidentalis* calyce Edw. Edmonton, Alta.: Pocahontas, Alta.; April (K. Bowman). Addition to the Alberta list.

57. *Eurymus hecla glacialis* McLach. Nordegg, Alta.; June. (K. Bowman). Addition to the Alberta list.

59. *Eurymus eriphyle autumnalis* Ckll. Edmonton, Alta.; Banff, Alta.; Nordegg, Alta.; Red Deer, Alta.; (K. Bowman). Addition to Alberta list.

64. *Eurymus christina pallida* Ckll. Nordegg, Alta.; Red Deer, Alta.; (K. Bowman). Addition to Alberta list.

64. *Eurymus christina gigantea* Stkr. Edmonton, Alta.; Nordegg, Alta.; Red Deer, Alta.; (K. Bowman). Addition to Alberta list.

Satyridæ.

* *Oeneis semidea arctica* Gibson. Bernard Harbour, N.W.T., July, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-18; Vol. III, Part I, Lepidoptera, p. 13.

* *Oeneis simulans* Gibson. Bernard Harbour, N.W.T., July, 1915, (F. Johansen); Rep. Can. Arctic Exp. 1913-18; Vol. III, Part I, Lepidoptera, p. 14.

* *Oeneis cairnesi* Gibson. White River District, Y.T., lat. 61° 55′, long. 141°, July 16, 1913, (D. D. Cairnes); Rep. Can. Arctic Exp. 1913-18, Vol. III, Part I, Lepidoptera, p. 15.

* *Oeneis brucei yukonensis* Gibson. Klutlan Glacier, Y.T., June 13-15, 1913, (E. W. Nesham); elevations 8,200-8,500 feet; Rep. Can. Arctic Exp. 1913-18, Vol. III, part I, Lepidoptera, p. 15.

Nymphalidæ.

151. *Euptoieta claudia* Cram. Fort Steele, B.C., (W. B. Anderson). First record we have for British Columbia.

157. *Argynnis leto* Behr. Blairmore, Alta., July, (K. Bowman). Addition to Alberta list.

* *Brenthis natazhati* Gibson. 141st Meridian, north of Mount Natazhat, 8,600 feet, June 15, 1913, (E. W. Nesham); Bernard Harbour, N.W.T., July 14, 1916, (F. Johansen); Rep. Can. Arctic Exp. 1913-18, Vol. III, Part I, Lepidoptera, p. 21.

* *Brenthis distincta* Gibson. Harrington Creek, Y.T., lat. 65° 05', July 30, 1912, (D. D. Cairnes); Eduni Mt., 6,000 ft., Gravel River, N.W.T., July 8, 1908, (J. Keele); Tindir Creek, Yukon Territory, lat. 65° 20' international boundary; July 25, 1912, (D. D. Cairnes); Rep. Can. Arctic Exp. 1913-18, Vol. III, Part I, Lepidoptera, p. 25.

211. *Euphydryas nubigena beani* Skin. Pocahontas, Alta., July, (K. Bowman). Addition to Alberta list.

283. *Vanessa virginiensis* Dru. Edmonton, Alta., July, (D. Mackie). Addition to Alberta list.

Lycaenidæ.

352. *Strymon melinus* Hbn. Onah, Man., Aug. 20, 1914, (E. Criddle).

* *Plebeius incariodes blackmorei* B. & McD. Goldstream, V. I., B.C., May 31, (E. H. Blackmore); Can. Ent. LI, 92.

427. *Plebeius melissa* Edw. In the note regarding this species published in the *Ent. Record* for 1918, the word "common" should be corrected to read "uncommon."

Sphingidæ.

753. *Proserpinus flavofasciata* Wlk. Mile 214, H. B. Ry., Man., July 17, (J. B. Wallis).

Saturniidæ.

794. *Pseudohazis eglanterina* Bdv. Blairmore, Alta., (K. Bowman). Addition to Alberta list.

Arctiidæ.

851. *Roeselia minuscula* Zell. Miami Man., July 4, 1914, (J. B. Wallis).

Noctuidæ.

1076 *Melaporphyria immortua* Grt. Edmonton, Alta., May, (K. Bowman). Addition to Alberta list.

* *Parabarrovia keelei* Gibson. Mountain below Twitza River, near Gravel River, N.W.T., July 2, 1908, (J. Keele); Rep Can. Arctic Exp. 1913-18, Vol. III, Part I, Lepidoptera, p. 33.

1275 *Euxoa infracta* Morr. Blairmore, Alta., Aug., (K. Bowman). Addition to Alberta list.

1332. *Euxoa esta* Sm. Wellington, B.C., Aug., 19, 1903, (T. Bryant); Victoria, B.C., Sept. 3, 1916, (E. H. Blackmore). Listed in 1906 B.C. list under the name *velleripennis*, (E.H.B.).

1339. *Euxoa campestris* Grt. Edmonton, Alta., August, (D. Mackie). Addition to Alberta list.

1379. *Chorizagrotis thanatologia perfida* Dod. Peachland, B.C., July 30, 1919, (J. B. Wallis).

1455. *Agrotis cinereicollis* Grt. Lillooet, B.C., July 3, 1918, (A. W. A. Phair). Peachland, B.C., Aug. 8, 1915, (J. B. Wallis). New to British Columbia, (J. B. Wallis).

1507. *Aplectoides occidens* Hamps. Sicamous, B.C., Aug. 12, 1915, (J. B. Wallis).

1596. *Rhynchagrotis gilvipennis* Grt. Maillardville, B.C., July 18, 1919, (L. E. Marmont).

* *Anarta subfumosa* Gibson. Armstrong Point, Victoria Island, N.W.T., July, 1916, (J. Hadley); Rep. Can. Arctic Exp. 1913-18, Vol. III, Part I, Lepidoptera, p. 34.

1871. *Stretchia plusiaeformis* Hy. Edw. Among some specimens determined for Canon V. A. Huard, of Quebec, Que., was one of this species, which was described from Nevada. As I had never seen this species from Eastern Canada, I questioned its occurrence in Quebec Province, but Canon Huard assured me that it was captured at Chicoutimi in 1881. (A.G.).

1900. *Perigrapha algula* Sm. Sahtlam, Van. Isl., B.C., May 10, 1918, (G. O. Day).

1986. *Rancora brucei* Sm. Nordegg, Alta., June, (K. Bowman). Addition to Alberta list.

2060. *Oncocnemis umbrifascia* Sm. Lillooet, B.C., Sept. 5, 1918, (A. W. A. Phair). New to British Columbia, (E.H.B).

2137. *Graptolitha ferrealis* Grt. Edmonton, Alta., April (D. Mackie). Addition to Alberta list.

2174. *Xylena thoracica* Put.-Cram. Okanagan Falls, B.C., April 7, 1913, (E. M. Anderson); Rossland, B.C., (W. H. Danby). New to British Columbia. It may be mentioned here that the species going under the name of *cineritia* Grt., in B.C. collections is in reality *mertena* Sm., (E.H.B.).

2178. *Eurotype confragosa* Morr. Tahu River, B.C., Sept. 30, 1906, (T. Bryant). This is the first authentic record for B.C. *Medialis* Grt., which is a synonym of *confragosa* Morr. is recorded from Wellington, B.C., in the 1906 check list but upon a recent examination of the specimen I find it to be *E. contadina* Sm. (E.H.B.).

* *Homoglaea murrayi* Gibson. Bernard Harbour, N.W.T., July 10, 1916, (F. Johansen); Rep. Can. Arctic Exp. 1913-18, Vol. III, Part I, Lepidoptera, p. 36.

2316. *Trachea mixta* Grt. Winnipeg, Man., June 24, 1911, (J. B. Wallis).

2380. *Luperina passer conspicua* Morr. Edmonton, Alta., (D. Mackie). Addition to Alberta list.

2513. *Merolonche ursina* Sm. Nordegg, Alta., June, (K. Bowman). Addition to Alberta list. Wellington, B.C., June 6, 1904, (T. Bryant). This name is new to B.C., but I suspect it is the same insect which has been previously recorded under the name *lupini* Grt. Very rare in B.C. collections, (E.H.B).

2636. *Helotropha reniformis atra* Grt. Victoria, B.C., Aug. 2, 1916, (E. H. Blackmore); Duncan, B.C., (E. M. Skinner). First record of the form *atra* from B.C., (E.H.B.).

2837. *Eutricopis nexilis* Morr. Reared from larvae found on *Antennaria* at Aylmer, Que., emerged in office Jan. 10, 1920, (J. McDunnough).

3012. *Sarrothripus revayana cinereana* N. & D. Vancouver, B. C., May 6, 1902; Mission, B.C., Aug. 8, 1904, (R. V. Harvey). New record for B.C., (E.H.B.).

* *Autographa rectangula nargenta* Ottol. Vancouver Island, (A. W. Hanham): Kalso, B.C., (J. W. Cockle); Jour. N. Y. Ent. Soc., XXVII, 122.

* *Autographa interalia* Ottol. Nordegg, Alta., (K. Bowman); Banff, Alta., (R. Ottolengui); Jour. N. Y. Ent. Soc., XXVII, 122.

* *Autographa diversigna* Ottol. Nordegg, Alta., (K. Bowman); Laggan, Alta., (T. Bean); Jour. N.Y. Ent. Soc. XXVII, 121.

* *Autographa magnifica* Ottol. Ucluelet, B.C., (C. H. Young); Jour. N.Y. Ent. Soc. XXVII, 124.

3241. *Autographa ottolenguii* Dyar. Dawson, Y.T., 1909, (A. Day).

Autographa pulchrina Haw. Dawson, Y.T., 1909, (A. Day). This record was received from Mr. G. O. Day, of Duncan, B.C., with the statement "Dr. Ottolengui gave me to understand that this is the first record for the North American Continent."

3313. *Melipotis versabilis* Harv. Quamichan, Van. Isl., B.C., May 31, 1908, (G. O. Day); Cawston, B.C., July 24, 1917, (W. R. S. Metcalfe).

3333. *Syneda alleni saxea* Hy. Edw. Blairmore, Alta., June, (K. Bowman). Addition to Alberta list.

3487. *Epizeuxis scobialis* Grt. Kingsmere, Que., July 23, 1919, (R. N. Chrystal).

3501. *Zanclognatha minoralis* Sm. Quebec, Que., July 27, 1918, (V. A. Huard). Addition to Quebec list.

Notodontidæ.

3640. *Heterocampa umbrata* Wlk. Aylmer, Que., June 2, 1919, (C. B. Hutchings). Addition to Quebec list.

Lymantriidæ.

* *Olene dorsipennata* B. & McD. Chelsea, Que., July 8-14; Aylmer, Que., (J. McDunnough); Can. Ent. LI, 102.

3712. *Olene vagans willingi* B. & McD. Edmonton, Alta., July, (D. Mackie). Addition to Alberta list.

3712. *Olene vagans grisea* B. & McD. Quamichan, Vancouver Island, B.C., July 22, 1916, (G. O. Day).

Geometridæ.

3972. *Coryphista meadi* Pack. Blairmore, Alta., June-July, (K. Bowman). Addition to Alberta list.

3990. *Thera otisi* Dyar. Mt. Arrowsmith, Vancouver Island, B.C., (T. Bryant).

3999. *Dysstroma cervinifascia* Wlk. Nordegg, Alta., July, (K. Bowman). Addition to Alberta list.

4017. *Hydriomena renunciata* Wlk. "Province of Quebec" (V. A. Huard). Addition to Quebec list. Edmonton, Alta., May-June, (K. Bowman). Addition to Alberta list.

4208. *Eupithecia albicapitata* Pack. Edmonton, Alta., July, (K. Bowman). Addition to Alberta list.

* *Eupithecia probata* S. & C. Duncan, B.C., (C. Livingstone); Victoria, B.C., March 30, 1916; April 3, 1916, (E. H. Blackmore); Lepidopterist iii, 105.

* *Eupithecia moirata* S. & C. Penticton, B.C., April, 1913, (E. H. Blackmore); Lepidopterist, iii, 107.

4325. *Drepanulatrix liberaria* Wlk. Aylmer, Que., Sept. 3, 1919, (C. B. Hutchings).

4332. *Philobia ulsterata* Pears. Edmonton, Alta., June, (K. Bowman). Addition to Alberta list.

4349. *Macaria purcellata* Tayl. Nordegg, Alta., July, (K. Bowman). Addition to Alberta list.

4465. *Caripeta divisata* Wlk. Edmonton, Alta., July, (K. Bowman). Addition to Alberta list.

4489. *Pygmæna simplex* Dyar. Nordegg, Alta., July, (K. Bowman). Addition to Alberta list.

Pyralidæ.

4974. *Diaphania nitidalis* Stoll. Meach Lake, Que., Sept. 16, 1903, (C. H. Young). Addition to Quebec list.

5032. *Loxostege commixtalis* Wlk. Banff, Alta.; Nordegg, Alta., June-July, (K. Bowman). Addition to Alberta list.

* *Diasemia alaskalis* Gibson. Collinson Point, Alaska, July 10, 1914, (F. Johansen); W. of Konganevik (Camden Bay) Alaska, July, 1914, (F. Johansen); Rep. Can. Arctic Exp., Vol. III, Part I, Lepidoptera, p. 45.

5051. *Diasemia plumbosignalis* Fern. Nordegg, Alta., July, (K. Bowman). Addition to Alberta list.

5088. *Phlyctænia ferrugalis* Hbn. Edmonton, Alta., June, (K. Bowman). Addition to Alberta list.

* *Pyrausta ainsliei* Heinrich. St. John's, Que., (W. Chagnon). Jour. Agr. Research, XVIII, 3, 175.

5135. *Pyrausta fumoferalis* Hlst. Edmonton, Alta., June, (K. Bowman). Addition to Alberta list.

5548. *Mineola tricolorella* Grt. Reared from larvæ found in apples in Okanagan Valley, B.C., (E. P. Venables).

* *Pyla arctiella* Gibson. Collinson Point, Alaska, July 17, 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Vol. III, Part I, Lepidoptera, p. 46.

Pterophoridæ.

5915. *Pterophorus sulphureodactylus* Pack. Pointe Aux Alouelles, Ste. Catherine Bay, opp. Tadousac, Que., July 28, 1919, (V. A. Huard). Addition to Quebec list.

Gelechiidæ.

* *Aristotelia fragariæ* Busck. Victoria, B.C., (W. Downes); Proc. Ent. Soc. of Wash., XXI, 52.

6166. *Paralechia pinifoliella* Cham. Ottawa, Ont., July 1, 1907, (C. H. Young).

6200. *Anacampsis tristrigella* Wlshm. Aylmer, Que., June 21, 1919, (J. McDunnough). Addition to Quebec list.

6283. *Gelechia conclusella* Wlk. Ottawa, Ont., June 24, 1906, (C. H. Young).

6288. *Gelechia panella* Busck. Maple Bay, B.C., Aug. 3, 1914, (A. W. Hanham).

6290. *Gelechia fuscotæniaella* Cham. Aweme, Man., Sept. 5, 1915, (N. Criddle).

Tortricidæ.

* *Tortricodes fragariana* Busck. Victoria, B.C., (W. Downes); Proc. Ent. Soc., Wash., XXI, 52.

Gracilariidæ.

7925. *Lithocolletis affinis* F. & B. Aylmer, Que., July 24, 1919; mines in *Lonicera*, (J. McDunnough).

COLEOPTERA.

(Arranged according to Henshaw's list of Coleoptera of America, North of Mexico.)

Carabidæ.

* *Bembidium lengi* Notman. Cochrane, Ont., Aug., 1918, (Howard Notman); Jour. N.Y. Ent. Soc., XXVII. 98.

* *Pterostichus laevilatus* Notman. Golden, B.C., (Leng. col.): Jour. N.Y. Ent. Soc., XXVII, 231.

680. *Celia gibba* Lec. Aweme, Man., March 29, 1918; Maryfield, Sask., Aug. 30, 1916, (N. Criddle).

Celia brumalis Casey. Aweme, Man., Sept. 2, 1916, (E. Criddle). New to Canada.

* *Asaphidion yukonense* Wickham. Yukon Crossing, Y.T., May 21, 1911, (J. M. Jessup); Proc. Ent. Soc., Wash., XXI, 180.

Dytiscidæ.

1292. *Coelambus suturalis* Lec. Winnipeg, Man., Thornhill, Man., Miami, Man., Mile 214 to 332, H.B.R., Man., (J. B. Wallis). New to Manitoba.

* *Coelambus canadensis* Fall. Winnipeg, Man., Stony Mountain, Man., Miami, Man., (J. B. Wallis); N. A. species of *Coelambus,* published by J. D. Sherman, New York, 1919.

* *Coelambus tumidiventris* Fall. Stony Mountain, Man., April 15, 1912; Winnipeg, Man.; Stonewall, Man., (J. B. Wallis); Edmonton, Alta., April 8, 1916, (F. S. Carr); N.A. species of *Coelambus,* published by J. D. Sherman, New York, 1919.

* *Coelambus hudsonicus* Fall. Ungava Bay, H.B.T., (L. M. Turner); N.A. species of Coelambus published by J. D. Sherman, New York, 1919.

Coelambus punctilineatus Fall. Stony Mountain, Man., April 13, 1912, (J. B. Wallis).

1441. *Agabus lecontei* Cr. Peachland, B.C., Aug. 7, 1919, (W. R. Metcalfe and J. B. Wallis).

Silphidæ.

* *Colon elongatum* Notman. Cochrane, Ont., Aug., 1918, (Howard Notman); Jour. N.Y. Ent. Soc., XXVII, 98.

Pselaphidæ.

1899. *Batrisus fontalis* Lec. Aweme, Man., April 18, 1919; in swarm of ants, (*Acanthomyops*), (S. Criddle).

Staphylinidæ.

Atheta (*Acrostoma*) *blanchardi* Ful. Stonewall, Man., July 18, 1918, in rotten fungus, (J. B. Wallis).

Atheta comitata Csy. Stonewall, Man., Aug. 18, 1918, in fungus. (J. B. Wallis). New to Manitoba.

Atheta (*Datomicra*) *celata* Er. Onah, Man., July 13, 1918; in larch swamp, (J. B. Wallis). New to Manitoba.

Atheta (*Demetrota*) *subrugosa* Kiew. Onah, Man., July 12, 1918, in moss, (J. B. Wallis). New to Manitoba.

Aleochara (*Polychara*) *deflecta* Say. Stonewall, Man., Aug. 18, 1918, (J. B. Wallis). New to Manitoba.

Aleochara (*Euryodma*) *pleuralis* Csy. Treesbank, Man., July 18, 1918, (J. B. Wallis). New to Manitoba.

Silusa modica Csy. Stonewall, Man., in rotten fungus, (J. B. Wallis). New to Manitoba.

Anomognathus cuspidata Er. Winnipeg, Man., Aug. 27, 1918; under bark of rotten *Negundo*, (J. B. Wallis). New to Manitoba. Apparently introduced from Europe, (A.F.).

Homalota plana Gyll. Winnipeg, Man., July 30-Aug. 14, 1918; under bark of rotten *Negundo*, (J. B. Wallis). New to Manitoba. Apparently introduced from Europe, (A.F.).

Gnypeta manitobæ Csy. Stonewall, Man., Aug. 18, 1918, (J. B. Wallis).

Gyrophaena nana Payk. Winnipeg, Man., Aug. 27, 1918, in fungus, (J. B. Wallis). New to Manitoba.

Gyrophaena pulchella Heer. Stonewall, Man., Aug. 18, 1918; Winnipeg, Man., Aug. 27, 1918; in fresh whitish fungi, among the gills. (J. B. Wallis). Apparently an introduction from Europe, (A.F.). New to Manitoba.

* *Lathrobium tenebrosum* Notman. Cochrane, Ont., Aug., 1918, (Howard Notman); Jour. N.Y. Ent. Soc., XXVII, 99.

* *Lathrobium humile* Notman. Cochrane, Ont., Aug., 1918, (Howard Notman); Jour. N.Y. Ent. Soc., XXVII, 100.

* *Scopæus linearis* Notman. Cochrane, Ont., Aug., 1918, (Howard Notman); Jour. N.Y. Ent. Soc., XXVII, 100.

Endomychidæ.

3180. *Phymaphora californica* Horn. Duncan, B.C., (A. W. Hanham).

Erotylidæ.

3239. *Tritoma flavicollis* Lec. Duncan, B.C., (A. W. Hanham).

Colydiidæ.

3271. *Lasconotus pusillus* Lec. Aweme, Man., Onah, Man., July, 1919, (N. Criddle).

Histeridæ.

* *Saprinus rugosifrons* Fall. Aweme, Man., (N. Criddle); Can. Ent., LI, 213.

* *Saprinus castanipennis* Fall. Aweme, Man., June 21, 1918, (N. Criddle); Can. Ent., LI, 214.

* *Saprinus iris* Fall. Aweme, Man., May 31, 1909, July 1, 1915, (N. Criddle); Can. Ent., LI, 214.

Nitidulidæ.

3713. *Epuræa aestiva* Linn. Aweme, Man., 1919, (N. Criddle).

* *Epuræa ornatula* Notman. Cochrane, Ont., Aug., 1918, (H. Notman); Jour. N.Y. Ent. Soc., XXVII, 102.

Dascyllidæ.

3991. *Eucinetus punctulatus* Lec. Stonewall, Man., Aug. 18, 1918; in rotten fungus, (J. B. Wallis).

Elateridæ.

4390. *Anthous cucullatus* Say. Husavick, Man., July 27, 1912, (J. B. Wallis). New to Manitoba.

4403. *Anthous vittiger* Lec. Winnipeg, Man., (J. B. Wallis). New to Manitoba.

Ptinidæ.

Ptilinus lobatus Csy. Aweme, Man., June 24, 1919, (N. Criddle); Husavick, Man., July 6, 1917, (L. H. D. Roberts). New to Manitoba.

5359. *Dinoderus substriatus* Payk. Mile 214, H.B.R., Man., Winnipeg, Man., June, July; Peachland, B.C., (J. B. Wallis).

Cisidæ.

* *Dolichocis manitoba* Dury. Aweme, Man., Oct., 1918, (N. and T. Criddle); Can. Ent., LI, 158.

* *Cis criddlei* Dury. Aweme, Man., Oct., 1915-1918, (E. and N. Criddle); Can. Ent., LI, 158.

Scarabæidæ.

5426. *Canthon ebenus* Say. Lyleton, Man., Aug. 27, 1919; Boissevain, Man., (N. Criddle).

5551. *Aphodius haldemani* Horn. Rosebank, Man., Aug. 10, 1917, (J. B. Wallis). New to Manitoba.

* *Serica cucullata* Dawson. Montreal, Que., May 6, 1905, (A. F. Winn); Ottawa, Ont.; Winnipeg, Man., (J. B. Wallis); Aweme, Man., (N. Criddle); Kentville, N.S.; British Columbia; Jour. N.Y. Ent. Soc., XXVII, 34.

Cerambycidæ.

* *Callidium subopacum* Sw. South of Rampart House, Y.T., (D. H. Nelles); Rep. Can. Arctic Exp., 1913-1918, Part E, Coleoptera, p. 12.

6250. *Pachyta rugipennis* Newm. Winnipeg, Man., May 18, 1919, (L. H. D. Roberts). New to Manitoba.

6385. *Monohammus minor* Lec. Winnipeg, Man., July 15, 1918, (J. B. Wallis). New to Manitoba.

Chrysomelidæ.

6558. *Syneta carinata* Mann. Mt. Prevost, near Duncan, B.C., 2,500 feet, (A. W. Hanham).

6721. *Xanthonia villosula* Melsh. Bird's Hill, Man., Sept. 23, 1917, (J. B. Wallis). New to Manitoba.

10407. *Monoxia debilis* Lec. Melita, Man., July 1, 1919; collected on *Grindelia squarrosa*, (N. Criddle).

7001a. *Systena ligata* Lec. Husavick, Man., Aug. 3, 1914, on Canada thistle; Winnipeg, Man., Aug. 14, 1918, (J. B. Wallis). New to Manitoba.

Tenebrionidæ.

7528. *Scaphidema aenolum* Lec. Stonewall, Man., Aug. 7, 1918; under bark of dead aspen, (J. B. Wallis).

Melandryidæ.

7656. *Phryganophilus collaris* Lec. Duncan, B.C., (A. W. Hanham).

7695. *Canifa pallipes* Melsh. Winnipeg, Man., May 28, 1911; Victoria Beach, Man., July 1, 1918; Miami, Man., June 27, 1916; Aweme, Man., July 15, 1918, (J. B. Wallis).

Œdemeridæ.

7733. *Nacerdes melanura* Linn. Vancouver, B.C., July 15, 1919, (A. W. Hanham).

Meloidæ.

8025. *Nemognatha apicalis* Lec. Lillooet, B.C., July 13, (A. W. Hanham).

Curculionidæ.

* *Trichalophus stefanssoni* Leng. Bernard Harbour, N.W.T., Sept. 26, 1914; May 22, July 6, 7, 1915; June, July and Sept., 1916, (F. Johansen); Cape Krusenstern, N.W.T., July, 1916, (D. Jenness); Kogluktualuk river, Coronation Gulf, N.W.T., July, 1915, (J. J. O'Neill); Langton Bay, N.W.T., 1911, (V. Stefansson); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part E, Coleoptera, p. 20.

8381. *Apion pennsylvanicum* Boh. Magnus, Man., Sept. 2, 1917, (J. B. Wallis).

Apion commodum Fall. Stony Mountain, Man., Aug. 8, 1918, on *Psoralea esculenta*, (J. B. Wallis).

Apion finitimum Fall. Magnus, Man., Sept. 2, 1917, (J. B. Wallis).

Apion nasutum Fall. Onah, Man., July 12, 1918, (J. B. Wallis). New to Canada.

10823. *Macrops ulkei* Dietz. Aweme, Man., May 7, 1919, (N. Criddle).

8576. *Tanysphyrus lemnæ* Fab. Miami, Man., June 27, 1916; Treesbank, Man., July 18, 1918, (J. B. Wallis). New to Manitoba.

8619. *Magdalis subtincta* Lec. St. Norbert, Man., June 24, 1917; Aweme, Man., July 15, 1918, (J. B. Wallis).

8620. *Magdalis hispoides* Lec. Onah, Man., July 8-12, 1918, (J. B. Wallis). New to Manitoba.

8627. *Magdalis alutacea* Lec. Victoria Beach, Man., July 1, 1918, (J. B. Wallis). New to Canada.

10958. *Promecotarsus densus* Csy. Aweme, Man., July 15, 1918, (J. B. Wallis). New to Manitoba.

8669. *Anthonomus canus* Lec. Onah, Man., July 13, 1918, (J. B. Wallis). New to Manitoba.

Ceutorhynchus solitarius Fall. St. Norbert, Man., June 24, 1917, (J. B. Wallis). New to Manitoba.

Calandridæ.

Sphenophorus aequalis. Stonewall, Man., July 5, 1918, (J. B. Wallis). New to Manitoba.

Ipidæ.

* *Dendroctonus johanseni* Sw. Sandstone rapids, Coppermine river, N.W.T., Feb., 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part E, Coleoptera, p. 5.

* *Carphoborus andersoni* Sw. Sandstone rapids, Coppermine river, N.W.T., Feb. 15, 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part E, Coleoptera, p. 6.

DIPTERA.

(Arranged according to a catalogue of North American Diptera, by J. M. Aldrich, Smithsonian Misc. Coll. XLVI, No. 1,444. The numbers refer to the pages in the catalogue.)

Tipulidæ.

* *Dicranomyia alascaensis* Alex. Nome, Alaska, Aug. 24, 25, 1916. (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Vol. III, Part C, Diptera, p. 5.

80. *Limnobia sciophila* O.S. Lillooet, B.C., June 21, 1917, (M. H. Ruhmann); Gordon Head, B.C., April 30, 1918, (W. Downes).

81. *Limnobia solitaria* O.S. Lillooet, B.C., June 25, 1919, (M. H. Ruhmann).

97. *Xiphura topazina* O.S. Vineland, Ont., May 5, 1915, (W. A. Ross).

* *Nephrotoma arcticola* Alex. Bernard Harbour, N.W.T., July 1-14, 1916; July-Aug., 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Vol. III, Part C, Diptera, p. 10.

98. *Nephrotoma ferruginea* Fab. Bowmanville, Ont., June, 1913, (W. A. Ross).

* *Nephrotoma euceroides* Alex. Perth, N.B., June 15, 1915, (F. M. McKenzie); Can. Ent., LI, 172.

* *Erioptera angustipennis* Alex. Bernard Harbour, Dolphin and Union Strait, N.W.T., Aug. 1-7, 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Vol. III, Part C, Diptera, p. 5.

* *Tipula nebulipennis* Alex. Battle Harbour, Labrador, Aug. 1, 1912, (G. P. Engelhardt); Can. Ent., LI, 170.

* *Tipula trypetophora* Dietz. Victoria, B.C., July 6, 1912; An. Ent. Soc. Amer., XII, 89.

* *Tipula johanseni* Alex. Bernard Harbour, N.W.T., July 10, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Part C, Diptera, p. 11.

* *Tipula diflava* Alex. Bernard Harbour, N.W.T., July 12, 1915; Herschel Island, Y.T., July, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Part C, Diptera, p. 12.

* *Tipula hewitti* Alex. Bernard Harbour, N.W.T., July 1-14, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Part C, Diptera, p. 14.

* *Tipula subpolaris* Alex. Bernard Harbour, N.W.T., July-Aug., (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Part C, Diptera, p. 14.

* *Tipula besselsoides* Alex. Bernard Harbour, N.W.T., July 1-14, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Part C, Diptera, p. 15.

* *Tipula subarctica* Alex. W. of Kongenevik, Camden bay, Alaska, July 4, 1914, (F. Johansen); Rep. Can. Arctic Exp., Part C, Diptera, p. 15.

* *Tricyphona frigida* Alex. Ketchikan, Alaska, Sept. 10, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Vol. III, Part C, Diptera, p. 7.

* *Tricyphona brevifurcata* Alex. W. of Konganevik, Camden bay, Alaska, July 4, 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Vol. III, Part C, Diptera, p. 6.

* *Limnophila rhicnoptiloides* Alex. Bernard Harbour, N.W.T., July 15, 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Vol. III, Part C, Diptera, p. 6.

* *Stygeropis parrioides* Alex. W. of Konganevik, Camden bay, Alaska, June 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Vol. III, Part C, Diptera, p. 9.

100. *Tipula angustnpennis* Loew. Vernon, B.C., April 2, 1915, (M. H. Ruhmann).

101. *Tipula cognata* Doane. Vernon, B.C., April 2, 1915, (M. H. Ruhmann).

102. *Tipula dorsolineata* Doane. Vernon, B.C., (M. H. Ruhmann); Victoria, B.C., (W. Downes).

102. *Tipula eluta* Loew. Vineland, Ont., Aug. 18, 1914, (W. A. Ross).

* *Tipula noveboracensis* Alex. Beaver Dam, N.B., June 23, 1914, (J. D. Tothill); Can. Ent., LI, 167.

Chironomidæ.

* *Tanypus alaskensis* Mall.; Rep. Can. Arctic Exp., 1913-18, Part C, Diptera, p. 35.

* *Diamesa arctica* Mall. Colville Mts., Wollaston peninsula, Victoria Island. July 22-29, 1915, (D. Jenness). Angmaloktok, Colville mountains, Wollaston peninsula. Victoria Island, July 29, 1915, (D. Jenness): Rep. Can. Arctic Exp., 1913-18, Part C, Diptera, p. 37.

Culicidæ.

* *Ædes pionips* Dyar. White River, Ont., June 17-25, 1918; Prince Albert, Sask., Aug. 14-18, 1918: Red Deer, Alta., July 30-Aug. 3, 1918; Nepigon, Ont., June 26, 1918; Lochearn, Alta, Aug. 5-7, 1918; Lamoral, Alta., Aug. 6, 1918: Lake Louise, Alta., July 11-17, 1918, (H. G. Dyar); White River, Ont., June 24, 1907, (Knab); Kenogami river, Ont., June 30, 1903, (W. J. Wilson); Insecutor Inscitiæ Menstruus, VII, 19.

* *Ædes intrudens* Dyar. White River, Ont., June 12-25, 1918; Nepigon, Ont., June 26, 1918; Dryden, Ont., June 29-30, 1918; Winnipeg Beach, Man., July, 1918; Lake Minnewanka, Alta, July 22, 1918; Banff, Alta., July 7-25, 1918; Laggan, Alta, July 11, 1918, (H. G. Dyar). With the description the following statement appears: "Eastern records are found in the monograph under *impiger* (page 757). They are correct, except that 'Ottawa, Ontario (J. Fletcher)' should be transferred to *lazarensis*:" Insecutor Inscitiæ Menstruus, VII, 24.

* *Ædes nearcticus* Dyar. Bernard Harbour, N.W.T., July 9, 1915; June 21-July 1, 1916, (F. Johansen); Collinson Point, Alaska, June 23, 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Part C, Diptera, p. 32.

Bibionidæ.

166. *Bibio nervosus* Loew. Vernon, B.C., (M. H. Ruhmann); Saanich, B.C., (W. Downes).

Simuliidæ.

* *Simulium similis* Mall. Hood river, Arctic sound, N.W.T., Aug. 28, 1915, (R. M. Anderson); Bathurst inlet, N.W.T., Sept 1, 1915, (R. M. Anderson); Rep. Can. Arctic Exp., 1913-18; Vol. III, Part C, Diptera, p. 42.

* *Prosimulium borealis* Mall. Wollaston peninsula, Victoria island, 1915, (D. Jenness); Rep. Can. Arctic Exp., 1913-18, Vol. III, Part C, Diptera, p. 41.

Stratiomyidæ.

179. *Sargus decorus* Say. Lillooet, B.C., June 20, 1917, (M. H. Ruhmann).

180. *Sargus viridis* Say. Kelowna, B.C., June 18, 1918, (R. C. Treherne).

182. *Stratiomyia discalis* Loew. Vernon, B.C., May 17, 1917, (M. H. Ruhmann).

183. *Stratiomyia norma* Wied. Kelowna, B.C., June 26, 1918, (R. C. Treherne).

183. *Stratiomyia meigenii* Wied. Vernon, B.C., June 21, 1917, (R. C. Treherne).

183. *Stratiomyia maculosa* Loew. Lillooet, B.C., June 25, 1917, (M. H. Ruhmann).

189. *Nemotelus arator* Mel. Walhachin, B.C., July 11, 1918, (E. R. Buckell).

Tabanidæ.

195. *Chrysops obsoletus* Wied. Vineland, Ont., June 20, 1919, (W. A. Ross).

204. *Tabanus insuetus* O.S. Vernon, B.C., April 15, 1915, (M. H. Ruhmann).

205. *Tabanus maculifer* Bigot. Lillooet, B.C., July 24, 1917, (R. C. Theherne).

206. *Tabanus procyon* O.S. Vernon, B.C., June 8, 1918, (R. C. Treherne).

207. *Tabanus rhombicus* O.S. Vernon, B.C., April 15, 1915, (M. H. Ruhmann).

208. *Tabanus stygius* Say. Vineland, Ont., July 8, 1919, (C. H. Curran).

Bombyliidæ.

231. *Anthrax hypomelas* Macq. Penticton, B.C., (R. C. Treherne); Walhachin, B.C., (E. R. Buckell).

234. *Anthrax sinuosa* Wied. Lillooet, B.C., July 23, 1917, (R. C. Treherne).

236. *Bombylius lancifer* O.S. Lillooet, B.C., Oyama, B.C., (M. H. Ruhmann).

* *Villa webberi* Jhn. Montreal, Que., June 11, (G. Chagnon), Ottawa, Ont., June 14, (Bro. Germain); Psyche, XXVI, 11.

* *Ploas atratula* Loew. Goldstream, B.C., June 2, 1918, (W. Downes).

Therevidæ.

247. *Psilocephala lævigata* Loew. Walhachin, B.C., July 11, 1918, (E. R. Buckell).

248. *Thereva egressa* Coq. Vernon, B.C., June 10, 1918, (R. C. Treherne).

Asilidæ.

256. *Stenopogon californiæ* Wlk. Vernon, B.C., July 8, 1918, (R. C. Treherne).

259. *Cyrtopogon callipedilus* Loew. Vernon, B.C., May 5, 1915, (M. H. Ruhmann).

260. *Cyrtopogon longimanus* Loew. Lillooet, B.C., July 16, 1917, (M. H. Ruhmann.

271. *Laphria pubescens* Will. Duncan, B.C., July 28, 1918, (W. Downes).

* *Erax harveyi* Hine. Vernon, B.C., Aug. 11-15, 1904, (R. V. Harvey); An. Ent. Soc. Amer., XII, 115.

Dolichopodidæ.

* *Medeterus frontalis* Van Duzee. Joliette, Que., July 13, (J. Ouillet); Proc. Cal. Acad. Sci., Aug., 1919, p. 266.

* *Medeterus vittatus* Van. Duzee. Kearney, Ont., July 26; Toronto, Ont., Sept. 2; Niagara Falls, Ont., July 20, (M. C. Van Duzee); Proc. Cal. Acad. Sci., Aug., 1919, p. 268.

* *Hydrophorus pilitarsis* Mall. Teller, Alaska, July 29, 1913; Aug. 6, 1913, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Vol. III, Part C, Diptera, p. 51.

303. *Dolichopus pachynemus* Loew. Outremont, Que., June 20, (J. Ouillett); Chatham, Ont., June 17, 1915. (M. C. Van Duzee). Addition to Quebec list.

* *Dolichopus dasyops* Mall. Bernard Harbour, N.W.T., July 10, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-18, Vol. III, Part C, Diptera, p. 49.

309. *Pelastoneurus laetus* Loew. St. Louis, Que., Aug. 14, (J. Ouillet). Addition to Quebec list.

Empidæ.

* *Rhamphomyia erinacioides* Mall. W. of Konganevik, Camden bay, Alaska, July 4, 1914, (F. Johansen); Barter island, Arctic coast of Alaska, July 11, 1914, (D. Jenness); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 45.

* *Rhamphomyia ursina* Mall. Bernard Harbour, N.W.T., July 19, 1915, (F. Jonhansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 46.

* *Rhamphomyia similata* Mall. Bernard Harbour, N.W.T., July 18, 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 46.

* *Rhamphomyia herschelli* Mall. Herschel island, Y.T., July 29, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 47.

* *Rhamphomyia conservativa* Mall. W. of Bernard Harbour, N.W.T., July 14, 1916; Herschel Is., Y.T., July 29, 1916; Bernard Harbour, N.W.T., July 10, 18, 19, and Aug. 1-7, 1915; Young Point, N.W.T., July 18, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 48.

Lonchopteridæ.

333. *Lonchoptera lutea* Panz. Vernon, B.C., Aug. 31, 1917, (M. H. Ruhmann).

Phoridæ.

* *Aphiochaeta platychira* Mall. Nome, Alaska, Aug. 21, 24, 25, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 52.

* *Aphiochaeta alaskensis* Mall. Nome, Alaska, Aug. 24, 25, 1916, (F. Johansen). Rep. Can. Arctic Exp. 1913-1918, Vol. III, Part C, Diptera, p. 52.

Syrphidæ.

350. *Pipiza fraudulenta* Loew. Vineland, Ont., June 8, 1919, (C. H. Curran).

354. *Myiolepta strigilata* Loew. Vineland, Ont., June 10, 1919, (C. H. Curran).

354. *Myiolepta nigra* Loew. Vineland, Ont., June 16, 1919, (C. H. Curran).

362. *Didea fasciata fuscipes* Loew. Lillooet, B.C., July 24, 1917, (R. C. Treherne); Vineland, Ont., June 6, Sept. 20, 1919, (C. H. Curran).

366. *Syrphus genualis* Will. Walhachin, B.C., July 30, 1918, (E. R. Buckell).

Syrphus knabi Shan. Vineland, Ont., Sept. 9, 1919, (C. H. Curran).

* *Syrphus sodalis interruptus* Mall. W. of Kongenevik, Camden Bay, Alaska. July 4. 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 55.

368. *Syrphus xanthostoma* Will. Vernon, B.C., May 13, 1917, (M. H. Ruhmann).

370. *Mesogramma boscii* Macq. Saanich, B.C., May 10, 1918, (W. Downes).

371. *Mesogramma geminata* Say. Saanich, B.C., June 10, 1918, (W. Downes).

384. *Eristalis aeneus* Fab. Vineland, Ont., July 3-9, 1919, (C. H. Curran). First record we have for Canada.

387. *Eristalis inornatus* Loew. Vernon, B.C., May 31, 1917, (M. H. Ruhmann).

392. *Helophilus chrysostoma* Wied. Kelowna, B.C., June 26, 1918, (R. C. Treherne).

393. *Helophilus laetus* Loew. Vineland, Ont., June 4, July 7, 1919, (C. H. Curran).

394. *Asemosyrphus mexicanus* Macq. Kelowna, B.C., July 9, 1918, (R. C. Treherne).

Eumerus strigatus Fall. Aweme, Man., May 17, 1919, (N. Criddle); Vineland, Ont., June-Sept., (C. H. Curran).

398. *Xylota flavitibia* Bigot. Vernon, B.C., Aug. 10, 1915, (M. H. Ruhmann).
402. *Criorhina analis* Macq. Vineland, Ont., June 10, 1919, (C. H. Curran).
404. *Spilomyia longicornis* Loew. London, Ont., Aug. 25; Vineland, Ont., Sept. 8, 1919, (C. H. Curran).

Conopidæ.

412. *Myopa clausa* Loew. Kelowna, B.C., May 17, 1917, (M. H. Ruhmann).
413. *Myopia vicaria* Walk. Nelson, B.C., April 29, 1918, (R. C. Treherne).

Oestridæ.

419. *Cuterebra tenebrosa* Coq. Vernon, B.C., July, 1916, (M. H. Ruhmann).

Tachinidæ.

423. *Phorantha occidentis* Walk. Walhachin, B.C., July 16, 1918, (E. R. Buckell).
447. *Senotainia rubriventris* Macq. Vernon, B.C., (M. H. Ruhmann); Walhachin, B.C., July, (E. R. Buckell).
448. *Senotainia trilineata* Van der Wulp. Walhachin, B.C., July, (E. R. Buckell); Vernon, B.C., (M. H. Ruhmann).
* *Peleteria arctica* Mall. Cockburn Point, N.W.T., Sept. 5, 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 57.

Sarcophagidæ.

* *Meloposarcophaga tothilli* Parker. British Columbia, Savary Island, June 13-31, 1917, (R. S. Sherman); Can. Ent. LI., 155.
Sarcophaga communis Park. Walhachin, B.C., (E. R. Buckell).
512. *Sarcophaga helicis* Towns. Kelowna, B.C., June 13, 1918, (R. C. Treherne).
Sarcophaga planifrons Ald. Walhachin, B.C., (E. R. Buckell).

Muscidæ.

* *Phormia caerulea* Mall. Bernard Harbour, N.W.T., May 24, 1915; June-July, 1915-1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 58.
Pyrellia cyanicolor Zett. Vernon, B.C., May 30, 1917, (M. H. Ruhmann).

Anthomyidæ.

* *Phaonia imitatrix* Mall. Bernard Harbour, N.W.T., July, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 61.
* *Phaonia minima* Mall. Nome, Alaska, Aug. 21, 24, 25, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 61.
* *Mydaeina obscura* Mall. Bernard Harbour, N.W.T., Aug. 4, 1915, June, 1916, (F. Johansen); Colville Mts., Wollaston Peninsula, Victoria Island, July 22, 1915, (D. Jenness); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C., Diptera, p. 62.
* *Aricia borealis* Mall. Bernard Harbour, N.W.T., July, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C. Diptera, p. 64.
* *Alliopsis obesa* Mall. Bernard Harbour, N.W.T., June, 1915-16, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 70.

547. *Limnophora narona* Walk. Walhachin, B.C., July 17, 1918, (E. R. Buckell).

548. *Anthomyia albicincta* Fall. Vernon, B.C., Aug. 1, 1917, (M. H. Ruhmann).

* *Helina fletcheri* Mall. Radisson, Sask., July 30, 1907, (J. Fletcher); Can. Ent. LI. 274.

* *Helina tuberculata* Mall. Rigolet, Labrador, July 18, 1906; Can. Ent. LI. 277.

550. *Anthomyia pratincola* Panzer. Vernon, B.C., Aug. 1, 1917, (M. H. Ruhmann).

* *Hydrophoria arctica* Mall. Cockburn Point, Sept. 5, 1914, (F. Johansen); Bernard Harbour, N.W.T., June, 1915, (F. Johansen); Rep. Can. Arctic Exp. 1913-1918, Vol. III, Part C, Diptera, p. 69.

* *Hylemyia acrostichalis* Mall. Nome, Alaska, Aug. 21, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 72.

* *Hylemyia quintilis* Mall. Godbout, Que., July 25, 1918, (E. M. Walker); Can. Ent. LI. 274.

* *Hylemyia pedestris* Mall. Godbout, Que., July 25, 1918. (E. M. Walker); Can. Ent. LI. 274.

* *Hylemyia spinosissima* Mall. Port Hope, Ont., June 13, 1897, (W. R. Metcalfe); Can. Ent. LI. 95.

* *Phorbia brevitarsata* Mall. W. of Konganevik, Camden Bay, Alaska, June, July 4, 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 73.

558. *Pegomyia ruficeps* Stein. Vernon, B.C., (R. C. Treherne).

* *Pogonomyia quadrisetosa* Mall. W. of Bernard Harbour, N.W.T., July 14, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 66.

* *Pogonomyioides atrata* Mall. Bernard Harbour, N.W.T., July 7, 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 67.

* *Coenosia fuscifrons* Mall. Brockville, Ont., Aug. 12, 1903, (W. R. Metcalfe); Ottawa, Ont., Aug. 17, 1907, (J. Fletcher); Port Hope, Ont., May 14, 1897, (W. R. Metcalfe); Can. Ent. LI. 96.

563. *Schoenomyza chrysostoma* Loew. Vernon, B.C., Aug. 19, 1917, (M. H. Ruhmann).

Scatophagidæ.

* *Gonatherus atricornis* Mall. Bernard Harbour, N.W.T. and Cape Krusenstern, July 3, 1919, (F. Johansen); Rep. Can. Arctic Exp. 1913-1918, Vol. III, Part C, Diptera, p. 77.

* *Cordylurella subvittata* Mall. Bernard Harbour, N.W.T., July 18-19, 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 78.

* *Dasypleuron tibialis* Mall. Collinson Point, Alaska, June 20, 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 79.

* *Allomyia unguiculata* Mall. Chantry Island, Bernard Harbour, N.W.T., July 17, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 80.

Helomyzidæ.

* *Neoleria rotundicornis* Mall. Nome, Alaska, Aug. 24-25, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 83.

* *Oecothea aristata* Mall. Bernard Harbour, N.W.T., Aug. 1-7, 14, Sept., 1915; July 10, 1916. (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 82.

573. *Tephrochlamys rufiventris* Mg. Vernon, B.C., April 12, 1915, (M. H. Ruhmann).

Borboridæ.

* *Leptocera transversalis* Mall. Collinson Point, Alaska, June 13, 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 53.

Sciomyzidæ.

580. *Tetanocera plumosa* Loew. Lillooet, B.C.; Vernon, B.C., (M. H. Ruhmann).

Sapromyzidæ.

582. *Palloptera jucunda* Loew. Creston, B.C., Sept. 19, 1918, (R. C. Treherne).

Ortalidæ.

592. *Anacampta latiuscula* Loew. Vernon, B.C., (R. C. Treherne).

595. *Chrysomyza demandata* Fab. Vernon, B.C., July 5, 1918, (M. H. Ruhmann).

598. *Seoptera vibrans* Linn. Vernon, B.C., July 1, 1918, (R. C. Treherne).

Trypetidæ.

604. *Spilographa setosa* Doane. Vernon, B.C., July 17, 1919, (M. H. Ruhmann).

Piophilidæ.

* *Piophila borealis* Mall. W. of Konganevik, Camden Bay, Alaska, July 4, 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part C, Diptera, p. 84.

HYMENOPTERA.

The following new species of saw-flies appear in the Report of the Canadian Arctic Expedition, 1913-1918, issued Nov. 3, 1919, Vol. III, Part G.

Tenthredinoidea.

* *Rhogogastera reliqua* MacG. Nome, Alaska, Aug. 21-25, 1916, (F. Johansen).

* *Euura abortiva* MacG. Herschel Island, Y.T., adults from galls on leaves of *Salix reticulata* L., July, 1915, (F. Johansen).

* *Euura arctica* MacG. Bernard Harbour and Cape Krusenstern, N.W.T, July 6, 1916, (F. Johansen).

* *Pontania atrata* MacG. Herschel Island, Y.T., July, 1915, (F. Johansen).

* *Pontania lorata* MacG. Herschel Island, Y.T., adults from galls on *Salix arctica,* July, 1915, (F. Johansen).

* *Pontania delicatula* MacG. Herschel Island, Y.T., adults from galls on leaves of *Salix reticulata,* July, 1915, (F. Johansen).

* *Pontania deminuta* MacG. Bernard Harbour, N.W.T., Aug. 16, 1915, (F. Johansen).

* *Pontania quadrifasciata* MacG. Sandstone Rapids, Coppermine River, N.W.T., July, 1915, (F. Johansen).

* *Pontania subpallida* MacG. Bernard Harbour, N.W.T., July 12, 1915, (F. Johansen).

* *Pontania trifasciata* MacG. Bernard Harbour, N.W.T., July 15, 1915 (F. Johansen).

* *Amauronematus completus* MacG. Collinson Point, Alaska, June 20, 1914, (F. Johansen).

* *Amauronematus indicatus* MacG. West of Konganevik, Camden Bay, Alaska, July 4, 1914, (F. Johansen).

* *Amauronematus digestus* MacG. West of Konganevik, Camden Bay, Alaska, July 4, 1914, (F. Johansen).

* *Amauronematus cogitatus* MacG. Demarcation Point, Alaska, June 23, 1914, (F. Johansen).

* *Amauronematus varianus* MacG. West of Konganevik, Camden Bay, Alaska, June 27, 1914, (F. Johansen).

* *Amauronematus aulatus* MacG. Barter Island, Alaskan Arctic Coast, June 16, 1914, (D. Jenness).

* *Amauronematus magnus* MacG. Bernard Harbour, N.W.T., July 15, 1915, (F. Johansen).

Braconidæ.

* *Opius downesi* Gahan. Victoria, B.C., host *Rhagoletis pomonella* (W. Downes); Proc. Ent. Soc. Wash., XXI, 164.

Ichneumonidæ.

* *Dioctes modestus* Brues. Bernard Harbour, N.W.T., Aug. 7, 12, 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part G, p. 23.

* *Polyblastus arcticus* Brues. Ketchikan, Southern Alaska, Sept. 10, 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part G, p. 22.

* *Aptesis nivarius* Brues. Collinson Point, Alaska, June 20, 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part G, Hymenoptera, p. 21.

Formicidæ.

Solenopsis molesta Say. Found generally at points south of Penticton in Okanagan Valley, B.C., June, 1919, (R. C. Treherne and E. R. Buckell).

Tapinoma sessile Say. Found generally at points south of Penticton, in Okanagan Valley, B.C., June, 1919, (R. C. Treherne and E. R. Buckell).

Pogonomyrmex occidentalis Cresson. Found in Lower Okanagan, B.C., fairly common at points south of Fairview, but not common at points north of Fairview. Also found at Summerland, B.C., (R. C. Treherne and E. R. Buckell. Determined by Dr. W. M. Wheeler, who reported "first record of any species of *Pogonomyrmex* from British America."

Formica subpolita Mayr. var. *camponoticeps* Wheeler. Found at points south of Penticton, in Lower Okanagan Valley, B.C., June, 1919, (R. C. Treherne and E. R. Buckell).

Formica fusca L. var. *argentea* Walker. Fairview, B.C., Vaseaux Lake, B.C., Rock Creek, B.C., Naramata, B.C., June, 1919, (R. C. Treherne and E. R. Buckell).

Formica sanguinea Latr. subsp. *subintegra* Emery. Fairview, B.C., Vaseaux Lake, B.C., June, 1919, (R. C. Treherne and E. R. Buckell).

Formica neogagates Em. Fairview, B.C., Okanagan Falls, B.C., Kaleden, B.C., Vaseaux Lake, B.C., June, 1919, (R. C. Treherne and E. R. Buckell).

Camponotus laevigatus F. Smith. Osoyoos, B.C., June, 1919, (R. C. Treherne and E. R. Buckell).

Psammocharidæ.

* *Pompiloides canadensis* Banks. Truro, N.S., Aug. 12, (R. Matheson); Val Morin, Que., July 29, 30, (J. Ouellet); Can. Ent. LI., 82.

Apidæ.

* *Bombus neoboreus* Sladen. Bernard Harbour, N.W.T., Aug 17, 18, 1915; July 10, 1916; June 6, 21, 25; July 2, 9, 30; Aug. 7, 8, 17, 18, 1915; June 16, July 3, 1916; July 19, Aug. 10, 14, 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part G, p. 28.

Philanthidæ.

Philanthus (*Anthophilus*) *psyche* Dunn. Aweme, Man., August, 1914, (N. Criddle); Medicine Hat, Alta., July, August, 1917, (F. W. L. Sladen).

Philanthus (*Anthophilus*) *inversus* Patt. Medicine Hat, Alta., August, 1916, 1917, (F. W. L. Sladen). (What I believe to be the males of this rare species were taken by me at Medicine Hat, July, August, 1916, 1917 —F.W.L.S.).

Philanthus (*Pseuanthophilus*) *frontalis* Cr. Summerland, B.C., July, August, 1916, 1917; Medicine Hat, Alta., July, August, 1916, 1917, (F. W. L. Sladen).

Philanthus (*Anthophilus*) *multimaculatus* Cam. Vernon, Summerland, Keremeos, B.C., July, 1916, (F. W. L. Sladen).

Prosopidæ.

Prosopis ziziae Rob. Ottawa, June, 1913, (F. W. L. Sladen).

Prosopis modestus Say. Kaslo, B.C., June, July, 1906, (J. W. Cockle); Ottawa, June, July, August, 1913; Kazubazua, Que., August, 1913, (F. W. L. Sladen).

Prosopis elliptica Kirby. Kaslo, B.C., June, 1906, (J. W. Cockle);

Prosopis varifrons Cr. Ottawa, June, 1913, (F. W. L. Sladen).

Prosopis cressoni Ckll. Ottawa, June, July, August, 1913, (F. W. L. Sladen).

Colletidæ.

Colletes lacustris Swenk. Toronto, August, 1887, (W. Brodie); Ottawa, June, July, 1913, (F. W. L. Sladen).

Colletes brevicornis Rob. Aweme, Man., June, 1913, (N. Criddle).

Colletes compactus hesperius Swenk. Similkameen, Okanagan, B.C., Sept. 1913, (T. Wilson).

Colletes armatus Patton. Toronto, August, September, 1885, 1890, 1893, (W. Brodie); Rostrevor, Ont., September, 1907, (A. Gibson); Kazubazua, Que., August, 1913; Hull, Que., August, 1913, on *Solidago*; Ottawa, August, September, 1913, (F. W. L. Sladen).

Colletes fulgidus Swenk. Peachland, B.C., July, 1909, (J. B. Wallis).

Colletes americanus Cr. Toronto, August, 1885, (W. Brodie); Kazubazua, Que., August, September, 1913; Ottawa, October, 1913, (F. W. L. Sladen).

Colletes similis Rob. Aweme, Man., August, 1913, (N. Criddle).

Colletes hyalinus Prov. Toronto, July to September, 1882 to 1893, (W. Brodie); Ottawa, June, July, 1913; Kirk's Ferry, Que., July, 1913; Kazubazua, Que., July, 1913, (F. W. L. Sladen).

Colletes mesocopus Swenk. Toronto, June, July, August, 1887-1893; Port Sidney, Ont., June, 1897, (W. Brodie); Kazubazua, Que., July, 1913, (F. W. L. Sladen).

Colletes eulophi Rob. Toronto, June, July, August, 1885-1893, (W. Brodie); Ottawa, June, July, 1913; Kirk's Ferry, Que., July, 1913; Kazubazua, Que., July, 1913, (F. W. L. Sladen).

Colletes phaceliae Ckll. (*Salicicola geranii* Ckll.). Teulon, Man.; Pincher, Alta., July 10, 1904, (T. N. Willing).

ODONATA.

Coenagrionidæ.

* *Enallagma vesperum* Calvert. Toronto, Ont., Aug. 16, 1907, (E. M. Walker); Trans. Amer. Ent. Soc., XLV, 380.

HEMIPTERA.

Cicadellidæ.

* *Euscelis hyperboreus* Van Duzee. West of Kongenevik, Camden Bay, Alaska, June 27, 1914; Bernard Harbour, N.W.T., July 15, 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part F, p. 4.

NEUROPTEROID INSECTS.

Psocidæ.

Atropos pulsatoria Linn. Montreal, Que., Sept. 24, 1919, (E. H. Strickland).

Perlidæ.

* *Capnia nearctica* Banks. Bernard Harbour, N.W.T., June 25, 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part B, p. 3.

Trichoptera.

* *Analobia emarginata* Banks. Teller, Alaska, July 29, 1913, (F. Johansen). Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part B, p. 4.

DERMOPTERA.

Forficulidæ.

Forficula auricularia Linn. Vancouver, B.C., in house, (R. C. Treherne).

ORTHOPTERA.

Acridiidæ.

Orphulella pelidna Burm. Fairview, B.C., Aug. 7, 1919, (E. R. Buckell). New to British Columbia.

Chloealtis abdominalis Brun. Salmon Arm, B.C., Sept. 29, 1919, (E. R. Buckell).

Xanthippus (Hippiscus) vitellinus Sauss. Fairview, B.C., (E. R. Buckell); Osoyoos, B.C., (W. B. Anderson).

Melanoplus cinereus Scud. Fairview, B.C., Aug. 7, 1919, (E. R. Buckell). New to Canada.

* *Asemoplus somesi* Hebard. Banff, Alta., (N. B. Sanson); Lake Louise, Alta, (Mrs. Schaeffer); Kitchener Glacier on Mt. Kokanee, B.C., (A. N. Caudell); Trans. Amer. Ent. Soc. XLV, 271.

Locustidæ.

Amblycorypha oblongifolia De. G. Pt. Pelee, Ont., Sept., 1905, (P. A. Taverner).

COLLEMBOLA.

* *Achorutes sensilis* Folsom. Bernard Harbour, N.W.T., July 5, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part A, p. 5.

* *Onychiurus duodecimpunctatus* Folsom. Bernard Harbour, N.W.T., July 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part A, p. 6.

* *Entomobrya comparata* Folsom. Bernard Harbour, N.W.T., May, 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part A, p. 13.

THYSANOPTERA.

Apterothrips subreticulatus Bagnall. This species was described in the Trans. Nat. Hist. Soc. of Northumberland, Vol. III, pt. 1, p. 185. The type locality is Massett, Q.C.I., collected most probably by J. H. Keen. I have also taken the species at Lillooet, B.C., July, 1918. The type is in the British Museum, (R. C. Treherne).

* *Ælothrips auricestus* Treherne. Vernon, B.C., Kelowna, B.C., July, 1917, (R. C. Treherne); Can. Ent. LI., 184.

* *Euthrips cameroni* Bagnall. Seamans, Sask., Aug. 4, 1917, (A. E. Cameron); An. Mag. Nat. Hist. IV, ninth series, 271.

* *Frankliniella varicorne* Bagnall. Seamans, Sask., Aug. 4, 1917, (A. E. Cameron); An. Mag. Nat. Hist., IV, ninth series, 269.

ACARINA.

Cheyletidæ.

Cheyletus eruditus (Schrank). Montreal, Que., Sept. 24, 1919, (E. H. Strickland). First Canadian record, (E.H.S.).

Tetranychidæ.

* *Stigmaeus arcticus* Banks. Bernard Harbour, N.W.T., June 18, 1915, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part H, p. 11.

ARANEIDA.

(Arranged according to Bank's Catalogue of Nearctic Spiders, U.S.N.M., Bull. 72. The numbers refer to the pages in the catalogue.)

Clubionidæ.

14. *Clubiona riparia* Koch. Klondike Valley, Y.T., 1919, (W. E. Cockfield).

Linyphiidæ.

* *Microneta maritima* Emer. Cockburn Point, Dolphin and Union Strait, N.W.T., Sept., 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part H, p. 4.

* *Tmeticus alatus* Emer. Cockburn Point, N.W.T., Sept. 26, 1914; Bernard Harbour, N.W.T., June 27, 1916, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part H, p. 3.

Tmeticus conicus Emer. Klondike Valley, Y.T., 1919, (W. E. Cockfield).

Epeiridæ.

41. *Epeira carbonaria* Koch. Klondike Valley, Y.T., 1919, (W. E. Cockfield).
42. *Epeira diadema* Clerck. St. John's, Nfld., (A. English).

Thomisidæ.

48. *Xysticus limbatus* Keys. Klondike Valley, Y.T., 1919, (W. E. Cockfield).
49. *Coriarachne brunneipes* Banks. Klondike Valley, Y.T., 1919, (W. E. Cockfield).
51. *Tibellus oblongus* Wal. Klondike Valley, Y.T., 1919, (W. E. Cockfield).
52. *Philodromus pacificus* Banks. Klondike Valley, Y.T., 1919, (W. E. Cockfield). First Canadian record.

Lycosidæ.

* *Lycosa asivak* Emer. Bernard Harbour, N.W.T., June to September; Camden Bay, Alaska, July 4, 1914, (F. Johansen); Rep. Can. Arctic Exp., 1913-1918, Vol. III, Part H, p. 5.

Pardosa albiceps Emer. Klondike Valley, Y. T., 1919, (W. E. Cockfield).

59. *Pardosa uncata* Thor. Klondike Valley, near Dawson, Y.T., 1919, (W. E. Cockfield).

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Ontario Department of Agriculture

FORTIETH ANNUAL REPORT

OF THE

Beekeepers' Association

OF THE

PROVINCE OF ONTARIO

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

Printed by
THE RYERSON PRESS.

To His Honour LIONEL H. CLARKE,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration the Fortieth Annual Report of the Ontario Beekeepers' Association for 1919.

MANNING W. DOHERTY,
Minister of Agriculture.

DEPARTMENT OF AGRICULTURE,
TORONTO, 1920.

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Revising Committee—J. L. BYER, and H. G. SIBBALD.

Honey Crop Report Committee—W. J. CRAIG, H. G. SIBBALD, WM. COUSE, W. W. WEBSTER, President; F. ERIC MILLEN, Secretary-Treasurer.

Honey Exhibit Committee—WM. COUSE, JOHN TEMPLE, JOHN EYRE, F. ERIC MILLEN.

Press Committee—F. ERIC MILLEN, WM. A. WEIR.

Committee on Resolutions—M. B. HOLMES, JOHN NEWTON, H. E. EYRE.

Representatives to Fair Boards.

Toronto Exhibition—J. D. EVANS, Islington.
Ottawa Exhibition—M. B. HOLMES, Athens.
London Exhibition—E. T. BAINARD, Lambeth.

TREASURER'S REPORT

FOR THE YEAR ENDING OCTOBER 31ST, 1919.

Receipts.

Balance on hand, 1918	$234 24
Membership fees (1.50)	794 75
Membership fees (75c.)	422 65
Queen Order Receipts	1,071 65
Package Order Receipts	148 90
Affiliated Soc. Dues	155 00
Ontario Government Grants	1,000 00
Sundries	137 63
	$3,964 82

Expenditures.

Fees to County Assns.	$171 00
Grants to County Assns.	449 90
Committee and Conv. Exp.	164 40
Subscription to *Beekeeper*	941 68
Printing and postage	420 45
Package and Queen Payments	1,236 89
Office help	256 00
Sundry expenses	92 10
Balance on hand	232 40
	$3,964 82

JAMES ARMSTRONG,
President.

F. ERIC MILLEN,
Secretary-Treasurer.

Ontario Beekeepers' Association

The Fortieth Annual Convention of the Ontario Beekeepers' Association was held in the Carls-Rite Hotel, Toronto, on Tuesday, Wednesday and Thursday, November 11th-13th, 1919. The President, MR. JAS. ARMSTRONG, occupied the chair at all sessions. The attendance was excellent, and the discussions brisk and profitable.

PRESIDENT'S ADDRESS.

JAMES ARMSTRONG, R. RT. 1., SELKIRK.

In opening the fortieth annual meeting of the Ontario Beekeepers' Association I am very glad to see so many familiar faces to introduce to you a programme replete with interesting subjects. We have visiting with us to-day Mr. Davis and Mr. Markham from Michigan. We are pleased to have them with us, and we hope they will feel at home among us, and will enter into our discussions.

The past season has been poor with the Western Ontario and good with the Eastern Ontario beekeepers. Middlesex, Lambton, Kent, Elgin, Huron and Bruce Counties seem to have suffered the most. The majority of the beekeepers in these counties report almost a total failure. With us in Haldimand County conditions were a little better. We are able to report an average of forty-one pounds per colony which is about the same as the average for the province. Of the Eastern counties, Leeds topped the list with Russell, Renfrew and Peterborough Counties following closely, averaging about 100 pounds per colony. In quality the honey produced this past season seems to have been a fair average and the market, while slow in moving at the first, has developed nicely so that the prevailing price is quite satisfactory to beekeepers. From what I can learn there does not seem to be very much light honey in the hands of the dealers at present, although there are quite a few offerings of darker grades. The shortage in the jam pack and fruit this season does, I believe, insure a reasonable market for the darker grades.

Beekeepers are noted for being optimistic regarding coming crops. In the early part of August my opinion was that the prospects were very poor, but the mild growing weather has favored a strong growth of the clover plants, and the late rains have added very much to our prospects. The bees are going into winter quarters in excellent condition. There has been some difficulty in securing sufficient sugar for feeding and the lack of machinery for handling this situation has been very much felt this year. I have a feeling that some beekeepers are putting their colonies away to winter without sufficient storage. There is more or less uncertainty as to what next year's honey market will be, but I do not look for any startling changes until the labour situation settles down. One thing I feel sure of and that is that honey will maintain a good relative value when compared with other food stuffs.

I am glad to be able to report that the association is in a very thriving condition. We have increased our membership considerably even with the increased membership fees in course. The new arrangements adapted at the last convention, whereby every member of the Association becomes a member of the Local and Provincial Association automatically on the payment of his fees, has given good satisfaction. It has placed both the central and local organizations in a much better position to do good work. There is, however, one phase of our organization which I think could be improved. At the present time the local associations do not feel that they have a voice in the councils of the central organization. I feel that the district director should be elected by the local association before the general convention rather than that he should be elected at the convention.

The executive of the Association has undergone a few changes in the past twelve months. Doctor B. N. Gates the Secretary-elect last February, suddenly tendered his resignation to be effective April 17th, 1919. We were fortunate, however, in being able to secure the services of Mr. W. A. Weir, who carried on the work of the Association since the resignation of Mr. M. Pettit, and I wish to emphatically express my opinion that the Association is obligated to him for the work he has done. I am glad to be able to introduce to you to-day our new Provincial Apiarist and Secretary, Prof. F. E. Millen, of the Ontario Agricultural College. Prof. Millen is not a stranger to Ontario beekeepers. He has taken an active part in the early inspection efforts made in this province. He has spent a few years in Iowa as State Apiarist, and is eminently fitted to deal with the work before him in Ontario.

The securing of packages of bees and queens for members of the Association has been an exceedingly difficult task during the past year. We were unable to secure any packages, and I am of the opinion that this branch of our activities will have to be dropped for the time being. The demand for queens was very heavy. It was impossible to place all orders offered as breeders were booked to capacity. Orders that were placed were from three to six weeks late in delivery, and we were sorry to have to cancel many orders and refund the money to the members. It is very unsatisfactory to be at the mercy of the present shippers and especially in view of the ravages of European Foul Brood, and the only alternative it seems to me, is to arrange to raise our own queens. I believe this can be done much more efficiently by the Department of Agriculture and the Association than by the individual beekeepers. Proposals will shortly be laid before you by the secretary, outlining the establishment of a queen rearing yard to meet the next season's demand.

I am glad to announce that the foundations of a new Apicultural Building at the Ontario Agricultural College, Guelph, have already been made, and that we can confidently look forward to one of the finest and best equipped buildings on the continent to represent our interests in educational work. Among the many excellent contributions to the programme, you will notice that provision has been made on Thursday morning for the submission of a "Report of the State Apiarist." The question of inspection has been coming up at the convention every year and rightly so because the disease problem is one of our most difficult problems at the present time. I would, however, like to ask your earnest attention to the report which is to be submitted to you, as we feel that the whole problem of inspection calls for a change of policy. The time is most opportune for introducing such a change, and it is essential that we should stand together in a request for sufficient funds and legislation to conduct the work properly. Our efforts in the past have been purely educational in the final results. It is impossible to secure good results from inspection work in my opinion, without being able to control the movement of bees from one place to another in the province. I know we have made efforts to secure satisfactory legislation along these lines, and have not succeeded, but unless we can succeed our efforts in combating disease must continue to be purely educational. During the past two years we have modified the inspection policy so as to intensify the work of inspection, making an effort to clean up a small section of the province at a time. I am now clearly convinced that this policy is the policy for to-day, and also that if it is possible to secure sufficient funds, it would be very much better to arrange to have the Department Inspectors to treat, as well as inspect, diseased apiaries. A detailed proposal will be laid before you in the consideration of the Provincial Apiarist's Report, and I would like to see a thorough discussion of the subject.

REPLY TO PRESIDENT'S ADDRESS.

W. W. WEBSTER, 1ST VICE-PRESIDENT, LITTLE BRITAIN.

I would like to say just a few words about foul brood. I am not a foul brood inspector, neither have I ever had foul brood in my apiary. I do not know why I have been so fortunate, unless it is due to requeening with golden Italian queens which I consider a safeguard against European Foul Brood. But we have some disease in our county and quite near our own apiary, both kinds. European Foul Brood and American Foul Brood. Several years ago the inspectors gave our neighborhood some attention, then for some years past our apiarists have been largely their own doctors and nurses in combating disease. While they have been somewhat successful there was often some disease still lurking among the combs. When our inspectors came, they always did good work, but apparently the funds ran out before the disease was eradicated in our locality, Then, too, I suppose it would be selfishness on our part to expect all their attention when there was only a limited supply of funds for that purpose.

This year a new Provincial Apiarist appeared on the scene. He came and saw a case of long standing, and later two bee inspectors arrived. Like Julius Caesar, it might be said of Mr. Millen, "He came, he saw, he conquered." They made a good job, I believe, as far as they went, but I suppose the grants for this purpose are scarcely adequate to suppress the disease entirely. I doubt if the disease is becoming much less prevalent, and would suggest an effort to procure more money for this purpose, as $100 spent now might equal $1,000 spent later as the disease progresses.

Scarcity of help was one of our chief troubles last season, but I solved the labour problem by paying both salary and commission. As usual we had plenty of work for the farm hands, more than they could do, so I looked to our two boys thirteen and fourteen years of age to help extract, but this year they decided that they preferred farm work and said the bees were cross. In my dilemma, I said I would pay them salary and commission both, $2 a day and 10c a sting and 25c for very terribly very bad stings. This had the desired effect and the honey was taken off. While others were striking for a six-hour day, we put in six hours in the forenoon and six in the afternoon.

I have great faith in requeening all colonies with queens over two years of age. Three year olds and older queens too often drop out at the commencement of the honey flow. I usually see to this, but this season I attended to only a few, intending to requeen the others later, when I hoped to have more time at my disposal. But what was my surprise later to find on looking them over, that almost every colony with a three-year-old queen now possessed a 1919 queen. So on very busy seasons I would turn the requeening job over to the bees. I wonder if they would always be as obliging as this year. From past experience, I think not.

One thing I learned this year is that when you have been so careless as to have feeding to do late in the season, an inverted sixty pound honey can makes the best November feeder there is to be had.

I think our honey committee have done a good work. If we hold together we can get the price the committee suggest. This season I sold for 30c retail and 25c wholesale. Some told me it was the cheapest food they could buy. Then some had never tasted 30c honey before in their lives, and were anxious to try some. Then again, some of our weak-kneed brethren sold away below this, and in consequence my honey soon appeared high at the price, but fortunately by this time I was about sold out. Since the bees may strike for a higher price and shorter hours, and since they work so hard, is it not a shame to sell honey below its actual value. Would the bees not be grieved if we slaughtered the honey at too low a price for which they toiled so incessantly, and, before doing anything so rash, with Dr. Watts, let us consider:—

"How doth the little, busy bee
Improve each shining hour,
He gathers honey all day long
From every opening flower."

In conclusion let me urge and beseech you to stand by the honey committee. The sooner you do this, the sooner will the poet's vision be realized who saw:—

"A golden hive on a golden bank,
Where golden bees by alchemic prank,
Gather gold instead of honey."

Mr. McTavish, Second Vice-President: I do not think it is necessary for me to take your time up in making a speech. The business of the Association has been clearly explained by the President and Vice-President, and the remainder of the session can be more valuably occupied by discussions.

Mr. Holmes: Personally I was very well pleased indeed at the reference in your address to the fact that the County of Leeds leads in honey production. History has it that the good old County of Leeds has long stood well to the forefront in the production of butter, cheese and bacon, and now for once we have made a record in the production of honey.

The further reference that a continued effort would be made to make this Association a medium through which the beekeepers throughout the province would be able to secure a satisfactory supply of good queens for the improvement of their stocks and the fortifying of the same against the attacks of contagious diseases. This intimation, will meet with the hearty approval of beekeepers throughout the province, and of the community at large. The matter of destroying queens has served a good purpose, but the extraordinary difficulty of obtaining them during the last year, has been a source of grief to some of the beekeepers, and not a few, throughout the province. If this can be carried forward so as to further perfect the plan, and if the administration of to-day endorses the scheme and assists it, which I believe they will, then this grief may be abated to the extent that the beekeepers will be able to secure stock which will resist this disease which is doing such a great amount of damage.

I was glad to listen to the encouraging words in the address from the chair, and glad to be one of the convention here to-day. The production of honey during the year, in some localities has not been quite so good while in other places it has been better but the feature of it is that the consumer does not stop to ask the price to all. We have had it from our esteemed Vice-President that when a higher price than ordinary was asked, then curiosity prompted them to buy so as to learn just what thirty-cent-a-pound honey would taste like. They will probably know next year, too, what it will taste like, and the beekeepers will undoubtedly endeavour to bring before the community at large the injunction: "My son, eat thou honey for it is good."

J. L. Byer: Mr. President: Your address touches on subjects which are near to us at the present time. I refer, particularly, to queen rearing to be carried on by the Provincial Apiarist, and also to the foul brood question. Last year many of you will remember I brought up the subject of European Foul Brood and asked our Dominion Apiarist, Mr. Sladen, if it would be possible to get a small grant from the Dominion Government and have a queen rearing outfit placed there. The matter would be self-supporting, almost, if not quite from the start. As far as rearing our own queens is concerned, that is all right in a sense, but in some localities where we have black bees, there would be no use trying to rear queens. We would have a hybrid stock and would be no better off at the end of the rearing of queens than in the beginning. I know from sad experience a lot of queens that we get do not amount to much. I see no reason why this could not be carried on as a Federal matter, as well as a Provincial matter. We have nothing to do with Federal affairs, but if this Association goes on record as being in favor of something of this nature being done, the work could be carried on at Ottawa as well.

I do not know whether Mr. Sladen is here, but I would say if he is here, much work being done at Ottawa appears to be on the theoretical idea. The beekeepers are clamoring for something very practical. I do not think there is any way in which Mr. Sladen or the other men in charge of affairs at Ottawa or Guelph could earn the gratitude of the beekeepers more than by establishing yards where we can get strains of bees that are highly resistant to European Foul Brood. Foul brood is a serious situation at the present time, and doubly so because of the fact that the two diseases are going about. I know inspectors who were perfectly honest and sincere in their efforts and yet have not had the necessary experience, and they have made examinations and diagnoses of the two diseases, and there was a destruction of properties which was not warranted. I believe the inspectors were honest and sincere and worked to the best of their ability, but in future only men should be sent out who are thoroughly capable and able to distinguish between the two diseases, because they require entirely different treatment.

Wm. Weir: In connection with Mr. Byer's remarks regarding the inspection work of the past few years, he has mentioned the difficulty of securing men who were efficient in the diagnosing of the disease, particularly in those districts where the two diseases are rampant. Those districts will comprise York, Ontario, Durham, Victoria, Peel and Simcoe Counties. During last year and the year before we have had most serious difficulty getting men to work at the inspection work. Why? Because men who are properly qualified to inspect for diseases are not prepared to give their time which is worth from $10 to $15 a day for $5.50 a day, and you cannot expect them to. Men depending on bees for their livelihood must be in their yard when inspection is carried on.

Distinguishing between European and American Foul Brood is very difficult; I do not think there is any man present who can distinguish them. In nearly every case where there was a complaint of the diagnosis of this inspector, we went carefully through the colonies.

R. F. HOLTERMANN: If I am not much mistaken there are cases where the laboratory alone can decide as to whether that is American or European foul brood. I would have a good deal of sympathy with any man placed in the position of having to decide by the ordinary methods as to whether a certain disease was American or European foul brood. I have a letter from Mr. Kindig, the State Apiarist in the Michigan State Agricultural College, and he says that they have proven by laboratory experiments that there are stages where no man can really say whether it is American or European foul brood.

I have taken a good deal of interest in the question of foul brood, and I may say the reason I am here this afternoon is to hear this discussion. I do not think that there has been money enough granted to exterminate foul brood in Ontario, I believe the work would be done more thoroughly if there was more money to carry it on, and it would be a good thing for this province. We must remember that beekeeping is a branch of agriculture which is essential and necessary for the fruit grower, for the clover seed grower, for the alfalfa seed grower, and therefore that agriculture in general is interested in seeing that this disease is brought into subjection.

In connection with queen rearing for the beekeepers of Ontario, I am afraid if you succeed in starting that, you will give a great deal of trouble to the Provincial Apiarist. Beekeeping in Ontario, situated as it is without those early summers that the South has, is going to demand queens at an earlier time than the Province is in a position to supply, and at Guelph the altitude is high, and it is colder there than in a good many portions of the surrounding districts. But there is one thing I want to add, whatever these queens cost the department, should be charged to the beekeepers.

THE CHAIRMAN: It was not the intention of the Provincial Apiarist or anyone else to start queen rearing at Guelph. It would be started in the most suitable place in Ontario.

JOHN MEYERS: We lined up our Association a few days ago on the question of inspection, and the trouble seemed to be that they had written for inspectors to inspect apiaries in our district, but no inspectors had been sent. Of course, we know that things have been in rather a mess during the past year in regard to the authority of the Association, but a resolution was brought into our Association, that I thought possibly might be carried out and would be a means of instructing inspectors better than now. For instance, the answer one of our beekeepers got when he wrote for an inspector, was that inspectors had been sent to that district and they had not found foul brood, and they did not think it was necessary to send them again. The resolution passed at our meetings was: Could not each County Association engage from among themselves someone that would have authority to go through that county to inspect, and if anyone complained about foul brood being in his neighborhood, could there not be some person who would have authority from the Association to go to this place and see whether there was really foul brood there or not. I know inspectors have been sent a couple of times to our neighborhood and there was no foul brood discovered, and of course that all means expense, but if someone with authority from the County Association or from this Association went there and found out whether there was foul brood there or not, and then reported to the secretary as to whether an inspector was necessary, it would save considerable expense.

MR. MILLEN: We have now issued a special request form in which we ask several questions, such as the number of colonies, the kind of bees, the disease they think they have and then for a sample of the suspected comb from the suspected colony. In quite a few cases we have found there is no disease, and an inspector is really not needed. We have no way of telling from the letter whether the case really demands attention or whether the beekeeper imagines there is something wrong. On receipt of the special request form with sample of comb, we are able to diagnose it, and we have particulars as to the number of colonies, and the number of colonies suspected of the disease. In that way we can send an inspector if necessary, or write them and give instructions, and the expense of a trip for the inspector is often saved.

MR. HARKNESS: I am from the eastern part of the province, and in my locality foul brood is new, but we have had a very bad outbreak there. Our inspector for the district, who is located at Ottawa, was asked by the beekeepers to come and look over their bees, and he replied it was impossible for him to do so as he was engaged in his own apiary and could not leave. I would certainly endorse what Mr. Meyers brought forth, that the County Association or Associations have the power to appoint a man in affiliation with our Ontario Beekeepers Association to do local work. Mr. Donaldson will endorse what I say. Both of us did a lot of local work in our district; we were asked to go out to apiaries and inspect, and in many instances I was asked to requeen. What was the result? I searched the country far and wide for queens, and I could not get any. If I had even been able to get a half a dozen or a dozen queens, I could have given these men a start and something might have been done, but owing to the scarcity of queens, it was practically impossible to do so. I think it would be a very good idea indeed to give local associations the power to appoint a local man as inspector.

MR. WEIR: We have felt very keenly the difficulty of replying to all of the different special requests in the last two years. As you all are aware there is only $4,000 voted by the Ontario Government for all the inspection work, and it is impossible to reach every case of a special request in one season, even though it really demands attention. Mr. Harkness' and Mr. Meyers' idea is all right in so far as it goes, but as the Government looks at it the apiary inspection is carried out for all beekeepers, those outside the Association, as well as those connected with it. The Association, it is true, helps the movement and forwards it and suggests to the Government what is best for the country, but the Provincial Apiary work is distinct from the Association work.

In deciding what is the best policy, I will tell you what our experience has been: We would go into a district and start to work around a town for five or six miles, inspecting every apiary and giving instructions for treatment and requiring the beekeepers to sign an agreement. Then we would leave that district for another, and the funds were exhausted before much work was done, and there was no opportunity for a second visit or for checking up the beekeepers. We only have a limited amount of money, and we now put it to work in a definite small area where a real clean up will be effected. We select definite towns and inspect thoroughly around these towns, and the inspector makes a second visit and sees that his instructions are carried out, but it is difficult to get inspectors at the price offered. We undertook definite work in Ontario, Durham, Victoria, York County and part of Peel. We thought if we could fight the American disease in the West and keep the East clean, we would clean it all up. On the second visit, the inspectors found many cases neglected, and further than that, they all reported that a great many of the beekeepers had not the proper facilities to treat the disease and were unable to do the work as carefully as it should be done. There is not enough money to cover the whole of Ontario in the way I would like to see it done, so we have to specialize on certain sections and depend on a series of years for results.

Mr. Barnes: Have you not a resolution from the Middlesex County Beekeepers' Association regarding foul brood?

A.—Not that I know of.

Mr. Barnes: There was a resolution put through at the last spring meeting, and one copy was forwarded to the Ontario Association and the other to the Provincial Apiarist, that all the beekeepers should be registered, and selling by auction should be prohibited. It was intended through the registration that money could be raised, as every beekeeper would have to pay a certain fee.

Mr. Donaldson: We all deplore the small efforts that have been made in inspection work on account of not having funds. We are up against the problem of how shall we get funds? We have the brains and we can get together and secure the funds. My suggestion is that we appeal to the Government at Ottawa and place before them through a delegation the seriousness of this disease, how much honey is produced and how necessary it is.

What Mr. Harkness has said is quite right. With these inspectors who have been sent out, there has not been a really just inspection. Sometimes, I am told, inspectors in going around simply inspect two or three colonies instead of 100 or 150 colonies, and inspection of this sort is no good. Not that I say every inspector works along that line, but some do. Then we noticed inspectors, who went to an apiary where there was foul brood, did not disinfect their hands before going to their neighbors, and you can see what happens. We want thorough men, and if there is any man who knows the needs of the beekeepers it is the man in his own district. A beekeeper knows what the men in his county can do, and what difficulties they are up against. Mr. Harkness and I were not regular inspectors, but we had calls from all over the county; we did what we could but we were not able to spend days and days in this work.

It would be interesting to see an inspector in each county working through the Beekeepers' Association and the Department of Agriculture, and I see no reason why we should not be able to keep the business up.

Mr. Harkness: In regard to the expenses of the inspectors and equal distribution of the small grant which we are getting from the Government, I feel we want to economize, and no section of the Province of Ontario wants to hog it all, but we all want a portion of this grant. If we wish to economize, I think we can save a good deal of money by appointing, as we suggested, local inspectors in our own local county associations. Whatever money we have, and by whatever means we get that money, I would like to see it distributed throughout the province, and let it go as far as it will. We need some other system than the one we are working.

Mr. Holtermann: I believe we should take the position that beekeeping is an important branch of agriculture; that it is interwoven with other branches to which that industry is important, and that we should, without any hesitation, demand if necessary, at least ask, for a sufficient sum to carry on inspection thoroughly for a couple of years. I would not hesitate to ask for $25,000 or $30,000 in order to do that work, because if that money is spent wisely and there is some uniformity in inspection throughout Ontario, then we can expect to suppress American foul brood, at least, and it will require a great deal less money in the end.

MR. HARKNESS: This idea of letting everyone act as their own inspector is all very well. There will be a few individuals who will clean up their yards, but a great many will not. In our own immediate neighborhood there were men who wanted to clean up their bees and were anxious to do so, but they could not without getting instruction. How are we going to help these men? It is not the man who is going to clean up his own yard that we want to get at; they will be their own inspectors, but it is the man who does not know how to do it. We should send these men some help if we can possibly do so.

JOHN NEWTON: We never come to a meeting but this subject comes before us. During the past summer I met with Mr. Armstrong in the yard of a man who has been a beekeeper for probably twenty-five or thirty years. He was expecting the arrival of bees by the pound, and he was going to put them into a certain hive. Mr. Armstrong brought a comb over to me and he said, "What do you think of putting bees by the pound in a hive like that?" I said, it would not be very safe. We looked over several of the entrances and we found three hives where there was disease. I was almost positive of this, because I could smell it at the entrance. There was a man who had been a beekeeper for thirty years, and this subject has come before almost every convention, and yet he has tolerated the disease in his own yard, and was going to put bees by the pound into these hives. I am surprised at men like that, but he is not the only one; there are many of them. I have been in yards inspecting where men were raising queens from a hive that was rotten with disease, and Mr. Armstrong has found the same conditions. It just seems as though they will not do anything until the inspector comes around and points the disease out to them, and then they will do something.

We will never get anywhere until there is more money, and more men are put on the ground. Then we could have this matter cleaned up in a few years. But I agree with Mr. Armstrong that when a man is at home and can earn $15 a day, he is very foolish to go out and work for $5.50. I have a case in mind about which I wrote to Mr. Weir two years ago. A neighbor brought a comb to me and I saw it was very much diseased, and it was getting close to home, so I went over and spent pretty nearly a day with the man. Then I wrote to Mr. Weir, and he replied. "It is impossible to send a man, but I will send one next year." I wrote Mr. Weir the following year, and said, "Here is another summer past without any man coming into our section." I did not know what shape this yard was in at that time because I did not go over. I went over a year ago, and I thought I was doing some work, but I could not attend to it all the time. This work must be followed up; we will never be any better until we have more money and have competent men on the road to clean things up.

MR. WEIR: We had a man down there the summer before last who was instructed to stop off at that particular section and handle that case and go down to Essex and Kent. It happened at that time that the man was not able to carry out all he wanted to do in that district, and that particular case had to stand in abeyance. It is another case where we have to choose between two; where we cannot attend to both we have to attend to the one where we can get the most work accomplished. The inspector that went to that district went to Essex, and before he could get the work finished in Essex and get back to the job in hand for him at Mr. Newton's, the money was gone, and there was nothing else to do but to leave the matter over.

Mr. Meyers: Mr. Weir has just given us a reason for having county inspectors. The County Association would certainly put a man on a job like that who would know his business, and if this money was spent in paying that man's expenses around his own county, I think a great deal more work would be done than in inspecting one block. All the money might be spent in one block and it might be ten years before they got to my place, and we might be all out of business by that time because of foul brood. If there was an inspector appointed by each County Association, and that man was given sufficient to see that his own county was kept clean or made clean, everybody would be getting some benefit, and the County Associations would have a better grasp of foul brood in that county than we have here or at the Department at Guelph. Therefore, I am in favour of inspectors being appointed by each County Association for that county.

Mr. Kirby: This foul brood business is getting to be a pretty live question. It has been discussed for ages, Government inspectors have been appointed, and yet it seems to be on the increase. Some years ago I advocated the destruction of all diseased colonies, but there was no action taken on that line. We had an inspector in our section last summer, and he came across several parties that had diseased colonies. One man had a few colonies that were diseased and he gave him instructions what to do, and the inspector went away. The man followed some of the instructions as given; he took his old combs and diseased hives and stowed them away in the barn, and they were left there for months. The inspector should have done his work on the spot and burned them up.

We will never get rid of this foul brood business until vigorous means are taken to destroy it. It remains with you largely to have this matter attended to if you want this disease wiped out. If you do not take definite action in regard to the matter, we will discuss foul brood here for years and years to come.

Mr. Weir: In connection with Mr. Meyers' remarks regarding the appointing of good local inspectors, we have had very considerable difficulty in getting good local inspectors. The local inspection plan has been given a good trial ever since 1910 and up to 1917. We had on the force, in 1916, twenty-three inspectors in Ontario; each man was only given, on the average, three counties within range of his own apiary, and he was instructed to visit these three counties, but we have found it to be a failure. We have found a local man going into his neighbor's yard would not enforce the Foul Brood Act. If you can pick me out men who have enough backbone to arouse their neighbor's hostility for $5.50 per day, I will put them on.

Mr. Holmes: Someone has intimated during the course of the debate that this matter has been on the carpet for ages past, and in fact that it has grown foul. In other lines of work men and individuals are told, "Do this and you will do well: do that and you will suffer." They are plainly told that over and over again, and yet do they follow the instructions They say, "We will do well next year, but to-day and to-morrow and next week, we are going to do just as we please." With the campaign of education that has been conducted throughout this province relative to foul brood, bulletins have been repeatedly sent out in as plain form as plain English could make it, saying, "Do this and save your stock;

neglect to do this and you lose your stock," and when you come in direct conversation with individuals and refer to this, and they will say, "Oh, yes," but they do not comply with the conditions.

The cure effects itself in the final analysis, because if a man fails to introduce bees that are immune and to keep up his stock to the point of being immune, the attacks of the disease will eventually put him out of business, and he will not need any inspector to inspect his stock. With the campaign that will continue to be conducted by the department and our esteemed apiarist, the cure will be kept prominently before the mind of all classes who are engaged in the production of honey, and if they fail to follow the most excellent advice which is handed to them in the bulletins, they will be out of line, and the business will have resolved itself into the hands of specialists who will abide by the instructions.

MR. MEYERS: It seems to me in a case where a man is told he has the disease, if he will not promise to treat these colonies, then let them be treated in a way that they will never need treatment again. If he makes a promise to do it and does not do it, let him pay a fine of $100 or $200. As far as this whole question goes, I certainly think this Association should put on a good front and go down and ask for $25,000 or $30,000 for this work, and then the province will be covered in a way that the disease will likely be stamped right out.

MR. BYER: This is the most serious question confronting commercial beekeeping to-day. I have in the past, both in writing and in speaking, advocated that every man should be his own inspector, and every man who keeps bees in a commercial way must be able to diagnose the different diseases.

MR. CALDWELL: I think it would be a good thing, and perhaps advisable, to have the principal beekeeper in a locality—perhaps within a radius of four or five miles—given power to go into another man's yard and inspect those bees, and even though he had not the backbone to tell that man to clean up or clean out, he could report to headquarters and have somebody come down who would do so.

Q.—If that man was your neighbor, would you like to do the work?

MR. CALDWELL: I do not know that I would, but I think most beekeepers, if you go about it in a nice way, would be willing to let you do it.

With reference to getting more money, has the Government been asked for any large sum or have we simply been taking what we could get?

THE CHAIRMAN: We have been asking for more.

MR. CALDWELL: If we can put the question before them seriously, and ask for $25,000 or $30,000, they would begin to realize the thing was serious.

MR. HARKNESS: I feel that the educational campaign which has been made throughout the province has had the effect that a very large percentage of our beekeepers are willing to co-operate and clean up, and I really think that a very large number of these men who are keeping bees will co-operate with any inspector who may be sent in. Conditions now are very much different from what they were a few years ago in regard to this matter; people are realizing the seriousness of the situation, and I believe from now on inspectors will not have the difficulties that they once had.

MR. BYER: It seems to be the concensus of opinion that we want more money, so I think it would be in order that a motion be made and a committee formed to appear before the Minister of Agriculture, and that great care be taken in selecting that committee.

MR. BAINARD: You have been hearing the matter all from one side. I was appointed by the department as one of the local inspectors in our own district a few years ago. Things went very well until I struck one party who had foul brood. I only burned up two colonies, but he was very much put out about it, and raised a disturbance, so I told him to report to the Minister of Agriculture or the Provincial Apiarist. That is one case where it did not work, and in this particular case it would have been better if an outsider had done the inspecting.

MR. WEIR: Under the old system several inspectors asked me to give them districts far away from their own apiaries, because it brought them bad friends.

A MEMBER: Mr. Hoshal does this work in the spring when his time is not worth $15 a day. He used to have a motorcycle, and he visits every bee man in his district for his own interests; he asks them how things are turning out, asks them to look into the colonies and see how many dead colonies there are, and he tells me he does not find one per cent. of the beekeepers refuse to assist him in the spring of the year. He advises me that he has cleaned up his own district, within a radius of two to three miles for his own benefit when his time is not worth a great deal. That seems to be the only way, to let every large beekeeper help his own district.

Q.—Was there any disease in this district? A.—Yes, that was in Lincoln County.

MR. WHITESIDE: Those who have the disease and who do not clean it up, should be fined. I have not heard that suggested before until to-day, and I do not know but what that might work all along the line pretty well.

THE CHAIRMAN: We have a couple of beekeepers from the State of Michigan with us, one is an inspector, and perhaps he could tell us how to work the thing in Ontario.

MR. MARKHAM: I feel perfectly at home in this discussion. I would like to have you come over to our convention and hear this question discussed. It would be entirely different, for in our State we found out we did not know anything at all, and we are ready to get down and learn something. I am sure for one thing you need more money, and that is what we need. I do not know just how your Government is, but I will tell you what we did: We have an Association in Michigan similar to this, and we formed a committee and we got out a little booklet that could be read through in two and a half minutes, stating the number of tons of honey we gathered, the number of beekeepers, the number of colonies and their value. We set out what we had done, the number of apiaries inspected and so on, and gave an itemized account of what we needed to carry on inspection, $10,000. A lot of people at that convention were afraid to ask for $10,000, but just before the Legislature convened, the members sent these booklets to their representatives and the senators, with a letter that they hoped they would help us out. We also brought out the subject of the bees being much more valuable than the honey produced in fertilizing the fruit and vegetables, and we got the $10,000 easily. We wished we had asked for $20,000.

We have found out we do not know anything about the disease at all. Since our $10,000 became available, the 1st of July, we have done quite a little inspection work. The first thing we did was to enforce one of our laws which prohibits the keeping of bees in cross-comb hives. There was quite a lot of work.

About all the twenty inspectors did was to enforce that law as best they could, and discover diseased areas, and we expect next spring to get down to business. By laboratory work we found what a good many had diagnosed as American foul brood was European foul brood. I thought I could tell American foul brood as well as anybody, but I have changed my mind entirely. Mr. E. R. Root was up in our State, and I believe he knows as much about the disease as any man, and he says there is no test that a man can go by to be sure, until we come down to the laboratory test. They take samples and send them in. We have very little American foul brood, but a good deal of European.

MR. WEIR: Where the two diseases were known to exist in a given locality, did they have any trouble in determining bacterially between the two?

MR. MARKHAM: In our laboratory work, there is an absolute distinction between the two diseases. Under a microscopic test, they are not yet able to determine between the two diseases.

MR. WEIR: I might just mention that the question of bacterial examination was taken up at the college last year by Prof. Jones, but we have not got it down to anything like a fine point, I think that ought to be followed up, if what Mr. Markham has told us is correct.

REPORT OF THE SECRETARY FOR 1919.

F. ERIC MILLEN, O.A.C., GUELPH.

The total number of memberships in the Ontario Beekeepers' Association received during the year ending October 31st, 1919, is 1144, an increase of 214 memberships over last year. Three additional County Associations were formed and affiliated with the Provincial Association during the year, viz., Wentworth, Durham and Dundas. There are now thirty affiliated societies in good standing.

Following is the list of counties with the number of paid up members on October 31st, 1919. Those counties marked with a star have no County Associations.

Counties.	Members.	Counties.	Members.
*Algoma	5	*Muskoka	7
Brant	33	Timiskaming	13
Bruce	41	Norfolk	11
Carleton	46	*Northumberland	12
*Dufferin	5	*Ontario	23
Dundas	12	Oxford	46
Durham	12	Powassan	22
*Elgin	14	Perth	32
Essex	11	*Peterboro	8
*Frontenac	9	*Prescott	2
*Glengarry	6	Prince Edward	11
Leeds and Grenville	25	*Rainy River	6
Grey	30	Renfrew	14
Haldimand	25	Russel	18
Halton and Peel	45	Simcoe	47
*Hastings	20	Stormont	6
Huron	26	Victoria	31
Kent	36	*Waterloo	28
Lambton	33	Wellington	40
*Lanark	9	Wentworth	46
Lincoln and Welland	58	York	35
*Lennox	8	Toronto City	74
*Manitoulin	1	Outside the Province	..
Middlesex	79		

The queen order business was continued during the year, and one hundred and thirty-three members purchased 783 queens at an average price of $1.23 each. Last year the price of queens averaged eighty-four cents each; in 1917 the queens averaged sixty cents each.

Numerous enquiries and orders for combless packages of bees were received, but as the breeders were sold out until very late in the season, all orders were cancelled and members were advised not to order package bees for delivery too late in the season.

The demand for queens and combless packages of bees, the past two or three years has far exceeded the supply. This has caused some beekeepers to enter these two lines of business with insufficient experience and equipment and consequent disappointment to beekeepers who ordered queens or package bees from them. The rapid growth and development of beekeeping has also allowed some unscrupulous beekeepers to advertise queens and bees for sale, when they apparently have had no intention of filling the orders received. Members are cautioned against sending cash to unknown breeders unless steps are taken to assure either the bees or a return of the cash sent.

With regard to the remarks that the President made about a queen rearing apiary for the province, if such is carried out, it would be folly for the members of the Association to imagine that the Association could, if at all, adequately supply all the queens that will be wanted. Although there were only about 800 queens ordered this year, the demand undoubtedly would be to supply thousands of queens during the course of a season, but at the same time, I do believe if the Association could secure ground for a queen rearing yard, the scheme might be worked out in the course of a year or two, the same as the Poultry Department works out the idea of securing pure-bred males for the poultry keepers of the province. They do not attempt to raise all the cockerels for the poultry keepers throughout the province, but it was started at Guelph, and then gradually as this poultryman and that poultryman became expert, he was given a certain number of birds, and from these he raised cockerels for a part of the province. To-day they have a large number of these stations, or sub-stations, and I do not see any reason why we could not secure, finally, sufficient queens for all the beekeepers in the province, but it should be clearly understood that would take several years.

I feel sure in a very little while, a queen rearing yard, if run by an expert queen rearer—and we would have to have one—would be almost, if not quite, self sustaining, so there would be no real charge to the taxpayers of the province for that. I believe the scheme is a good one and one that the Association should consider. There is no question but what the demand for queens will exceed the supply for many years. It was extremely difficult, if not impossible, to secure queens this year at the time one needed them.

Moved by Mr. Meyers, seconded by Mr. W. W. Webster that the reports be adopted as read. Carried.

Mr. Eyre: In regard to inspectors appointed by the County Associations, has a County Association the power to pay the inspectors they appoint to look through the county and report the presence of foul brood; could they use the funds in that way?

The Chairman: I do not think the County Association could use the money in that way.

Member: Would someone give us the distinguishing points between American and European foul brood? If we are to be our own inspectors, we should be able to distinguish between the two.

Mr. Holtermann: I do not like to pose as an authority on that. I have had both diseases. I was very much afraid of European foul brood, and I lost some colonies the first year, because, although I had read of the symptoms of that disease, when I found it among my own bees, I was not quite sure of it. I started by shaking. After you clean out the dead larvae, I would requeen. But I believe that there are stages of European foul brood when you cannot tell whether you have American or European.

Mr. Byer: These are rare cases are they not?

Mr. Holtermann: Every case you speak of is always an extreme case. You may think you can follow up European foul brood with shaking, but you cannot do anything of the kind, and if you have one case in your apiary, you are pretty sure, within a few weeks to have twenty or thirty. That disease may be among your bees for years and you would know nothing about it. If you have the right strain of bees such as the Italians, they will clean out the disease when the larvae is very young. I think there are a great many more young larvae die from European foul brood than the average beekeeper is aware of. If I were to shake a colony to-day, it would not be any guarantee at all that it would not be there to-morrow. The great principle is that when you get a colony that does not clean out the diseased larvae rapidly, then you have the wrong strain of bees or you should change your queen.

Mr. Meyers: We have not had European foul brood in our part of the country, but it may come there some time, therefore, the question that was asked is a very vital question, and I would like to be able to know when I have got European foul brood. I know pretty well when I have American foul brood.

A Member: When you see your young larvae unsealed, looks as though it were melted down and it will shake out, that is your European foul brood. After a while it will rattle out. The American foul brood will dry down; you cannot cut it out, and the bees cannot cut it out. A strong strain of Italians is the remedy. If you have the American I should destroy at once.

Mr. Holtermann: I would sooner not speak on this European foul brood question because I do not like speaking on a question I am not thoroughly posted on, but the larva when quite young begins to look yellowish and stretches out. The bees will clean that young larva out, and my theory why that disease spreads so much more than the American foul brood is because the bees in drawing out that larva have the germs of the disease on their own bodies and carry it on to the blossoms, and other bees will go on those blossoms. No one can tell me, if I have European foul brood, that ten miles from there, next year, they would not have the disease. I know of a man who insisted that he had not any disease. I helped him to extract, and I found it among his bees, and he did not know he had it. And I knew when he saw it, he would be so worried that I did not tell him.

Mr. Byer: I do not wish to state I can always be positive in distinguishing between European and American foul brood, but I do say that I see no reason why beekeepers should not learn to know the two diseases and be able to tell the difference between them. To me they are entirely dissimilar, taken in the ordinary run. It has been my fortune or misfortune to be mixed up with hundreds of cases of European foul brood. I saw a case in Northumberland County ten years ago, where one hundred colonies went down to sixteen in a few months.

One point that has not been mentioned is the odor. American foul brood smells like an old glue pot. Once you smell it, you will never forget it. If I can get my nose near a colony, I can tell if they have American foul brood; it has that peculiar odor. European foul brood has never, in my experience exhibited that odor at all; it has a different odor. I know an Englishman who said he rather enjoyed the odor; it is a gamey odor—it has the odor of decaying flesh.

Another thing, seventy-five per cent. of the larvae that die from American foul brood die after the larvae has been sealed over; it is just about the reverse with the European foul brood; in fact the cells that are sealed over in European foul brood are very few, and from these cells you will get the worst odor. It has not the elastic consistency of the American foul brood. I would classify American foul brood larvae when it has that ropey consistency as being a coffee color, and European larvae that have died and are in that jelly like stage as being more of a dark chocolate color. Any beekeeper can be reasonably sure whether he has American or European foul brood.

Unfortunately we have both diseases in four of our yards in York County, and we are continually asking, "What is that?" Detect disease in time before the bees go so far that they are not worth saving, and do not let them get so bad that you cannot tell the two diseases apart; that is the point I wish to make. I know bacteriologists tell us there are stages of the diseases in which only an expert can tell the difference, but I do maintain for ordinary purposes, there is no need of being confused over the two diseases.

Mr. Caldwell: With regard to cleaning up European foul brood with Italian bees, I tried an experiment last spring. I had a lot of European foul brood in the yard, and only a few Italian hives, and I decided to give the Italian bees as hard a test as I could. I went to five hives that were in the most advanced stage of European foul brood, and I took out two combs from each and put them in the super of a strong Italian colony; about a couple of weeks later I looked in again, and these Italian bees were cleaning the combs out in the super, and they had the disease themselves. I thought I had fixed those Italian bees all right, but I did not do anything about it. About the middle of July, I looked into that hive again, and I only found one cell diseased, and later on there was not to be found a cell of any kind diseased, and that is what Italian bees can do for European foul brood.

QUESTION DRAWER.

Answered by John Meyers, Stratford.

Q.—Why do we seem to have better success with queens raised from colonies that have swarmed, than when using queen cells from artificial cell cups? A.—I don't know that that is the case. If we allow the queens to build their cells under the swarming impulse they generally raise very good cells. When raising the cells from cell cups we are apt to take the poor cells. I nearly always use cells from the swarming colonies, and I haven't had a great deal of experience the other way.

Mr. J. L. Byer: I have only raised one lot of artificial cell in my life.

Mr. Chrysler: I have raised artificial cells in different ways and I have found that the cells where the colonies are superceding their queen will generally produce a better queen than the average swarming cell. An artificial cell that is raised properly is as good as any other. Black bees are the poorest class for the raising of queen cells. They will vary a great deal according to how the larva is fed with larva jelly. When they are given an extra feed they develop very rapidly and to perfection. Feed is the greatest factor in producing a perfect queen. The egg that is laid for a worker takes twenty-one days to become perfect and in sixteen days you can get a perfect queen from the same egg. It is possible in artificial queen rearing to get as good queens as you do in any other way, but it is not generally accomplished.

Q.—Have you, or anyone present ever tried soaking foul brood combs in strong brine, if so, what is your opinion of same? A.—I never tried that. I have read that if you soak it in real cold water for twenty-four fours it will kill all the germs of foul brood. I tried that and it had no effect.

MR. MEYERS: I haven't tried it, and I don't think I want to.

GEORGE LOCKWOOD: I cannot say that I have tried it myself, but I have come in contact with a beekeeper who has tried it. He said he took some of the very worst samples of American foul brood and inserted them in a brine strong enough to cure pork, and he said that the scale and the dirt fell out of these combs, and they were perfectly clean, and he declared that he has not seen any sign of foul brood in these colonies since.

D. A. DAVIS: I had the pleasure of watching another man try to cure foul brood by using a 40% solution of formaldehyde. He had foul brood scattered all through his yard, but it did not help him, or make any difference.

Q.—If a cellar is too cold would the fumes from a coal oil stove used to heat the place, hurt the bees, and if so, which would be advisable, to let it remain cold, or use the stove? A.—A year ago this last winter, it was so cold my cellar got down to about 40°, and I like to keep them at about 45°. If it gets up to about 48° my bees get restless. When it got down to 40°, I put a coal oil stove in the cellar and kept it there, off and on for about a week, and I could not see that it made any difference, and the bees came out quite healthy. I had about ninety colonies in the cellar.

M. B. HOLMES, Athens: I would regard the experiment as dangerous. It would seem to me that it would produce a most disquieting effect on the colonies, and it is absolutely necessary that they should remain absolutely quiet. The use of artificial heat will produce a jumpy temperature, and instead of benefiting the colonies it will injure them.

MR. MEYERS: You would rather allow them to get below the proper temperature?

MR. HOLMES: Of the two evils I would choose the low temperature.

MR. EVANS: My friend Holmes is away off. There is nothing in the statement that there is any danger in using artificial heat in the cellar. I have kept my bees in the cellar for twenty-five years. There is a door between the furnace room and the bee cellar, and when it gets too cold I open the door and warm them up, and I have never lost a colony. I keep my bees at about 45°.

R. LOWEY: I winter my bees in the cellar, and I agree with Mr. Evans. I would use a coal oil stove, you must give plenty of ventilation and be careful. I had the experience of carrying a colony of bees right up to the kitchen range to warm them up and that certainly was a jumping up. I like a temperature of about 50° for wintering my bees. I live in Prince Edward County and I am only seven miles from the lake. I keep my bees in a sheltered yard. The bees will feel the cold more if they are hungry. When I took these bees up to the kitchen range, I let them get warmed up and then I fed them, they came out in the spring in very good shape. I would prefer to warm them up by some means than allow them to get too cold.

Mr. Armstrong: If the temperature gets too cold I like to warm them up in the same way that Mr. Evans does. I would not put a coal stove into a closed room, but if I had a furnace or something of that kind I would like to raise the temperature to the proper point.

A Member: If the temperature is running 55° day and night when you put in the bees, will they raise the temperature above 55°?

Mr. Meyers: That depends on how many you put in.

A Member: Supposing you put in fifty colonies?

Mr. Meyers: Yes, I think that would raise it some. I would rather have the temperature 40° or 45°.

A Member: Supposing you have a damp cellar?

A.—It should be warmer if it is damp.

Mr. Holtermann: I don't think we have any thing that is really worth very much on the wintering of bees aside from what has been done by the department at Washington. I am quite satisfied that in the past I have been wintering my bees at too low a temperature. It is claimed that 55° is much nearer the proper temperature to winter bees at than 45°. At the lower temperature the bees begin to get active and generate heat and that results in brood rearing.

Mr. Evans: I would not care if every man in the United States recommended 55°. I certainly would not have it. I have kept bees for twenty-five years, and I find that they are quieter at 45° than any other temperature. If I kept them at 55° they would be crawling all over the hives.

Mr. Millen: I believe that a great many beekeepers in the past have had thermometers that did not properly record the temperature. If they are kept near the floor they do not register the same as if they are nearer the ceiling.

A Member: My thermometer hangs about a foot from the ceiling.

Prof. Sladen: The position of the thermometer makes a great difference.

Mr. Webster: I think it is better to winter the bees outside and let the sun regulate the temperature.

Mr. Meyers: Find the temperature that your bees will keep quiet at and then you are safe.

Mr. Holmes: The recognized text books on beekeeping recommend perfect darkness and a uniform temperature and perfect quiet; therefore, I contend that anything that disturbs the bees has a bad effect.

BEEKEEPING IN NEW ONTARIO.

William Agar.

New Ontario is larger than Old Ontario, and I am located about 350 miles north of Toronto and about thirty miles north of Cobalt. In the spring of 1915, I went to the north with twenty-five one-pound packages of bees, and I managed to build them up for winter and get a little surplus honey. Mr. Pettit suggested that I should not try to winter bees up there, but let the queen die, extract the honey. He thought the money it would cost to winter the bees would re-stock me with bees the next spring. I told him that if he would supply the bees I would try the experiment. The following spring he sent me two one-pound packages from Mr. Achord, of Alabama. The bees got there about the middle of May. I put them in a hive with about three drawn combs. That is all they had to start on; the rest was foundation. I extracted 200 pounds of honey from these two colonies, and sold it for sixteen cents per lb., and increased them to four, and wintered the four. It looked pretty good to me. It did not cost me more than five dollars to land the bees up there. The bees wintered fairly well the next year, and gathered 233 pounds per colony. Twelve new beekeepers started, and the thirteen of us sent to Mr. Achord for bees and we got 126 pounds, they started to come about the 20th May, and continued coming every few days. There were about thirty packages that died. Of course, Mr. Achord could not replace them, but he refunded the money. Some of the queens were badly shaken, and some of the bees dead, and on the whole it was not very satisfactory. At the end of the season these bees had not enough honey to winter on because we had a poor summer. About the middle of September the weather turned fine, and during five days of September the bees got more honey from the aster than they got all summer. It was rather a thin honey, and of poor quality, and the weather turned cold right after that and we had rain, and I could not take the honey away from them and I had to winter them on poor stores of honey. My own bees that year gathered about thirty pounds of surplus honey. The winter of 1917-1918 was a severe winter, and I had few bees in the spring and I felt a little bit discouraged, and was not altogether satisfied with the method I was using. I was trying to apply southern methods to a northern location. The next year I had two colonies in the corner of the yard that were weak, and I took one of them for an experiment. The 4th July was the first they needed any supers. We had a very late spring and instead of giving them one or two with queen excluders, I gave them five without queen excluders. It was a Langstroth hive, ten frames, and I gave them five supers all at once. You would naturally think I was discouraging the bees by giving them too much room all at once. I came to the conclusion that I would leave them there till the end of the season, and then take them down and see what they had done. I put the six boxes there on July 4th. A neighboring beekeeper came along and he said "The queen will go up into the second brood chamber and fill that, and then go up into the third, and keep on going up." In one month's time I was so curious to know what was in there that I opened it up on the top story and I found that it was nearly all capped honey, a little open honey. The next two were solidly capped. That brings us down to the third one from the bottom, and there was two patches of brood about the size of my hand, and the rest was capped honey, the next one was all capped honey. The queen had gone below and was working below and had it full of eggs and open brood, and some capped. That was just in one month. I thought they had done so well that I just gave them four more. I opened them up about the first week in September and I gathered about 300 pounds of honey. I left them one super of honey on top of their brood chamber for winter, and they wintered well. There was just one entrance at the bottom.

Q.—Did you do anything with the queen cells? A.—No, the queen was clipped, and she was there the following spring. The supers were simply piled one above the other and propped up there. I have a six-foot fence around the yard, and the four boxes were above that fence, and I worked from a plank from the fence.

Q.—Did they fill the last four? A.—They were not all full, there was about two of them empty. I was down in Old Ontario all winter, and I went back there in April. I sold out down to nine colonies. I had only nine up there this summer. I gave them lots of comb, eight to nine supers each and left them all summer without any care, and nobody to look after them. I went back the third week in September, and as I walked into the yard, and the first one I came to happened to be a weak one and there was no honey, and the next one there was no honey, the second box from the bottom had a little honey, there was enough for them to winter on. I walked back through the yard, and there were a number of dead bees in front of one hive, and I concluded they had been robbing; I looked into that hive and it was the same only sufficient to winter the bees. There was nearly a ten quart pail of dead bees lying on the grass. I do not yet know what caused these bees to die. The entrance was partly blocked up, but they had an entrance. My neighbor said they were fighting, but he is not a bee-keeper and he would not know for sure. I worked with them for two weeks, and I got 1,725 pounds of honey from the other seven hives, so that makes pretty nearly 200 pounds each from the nine hives. They had no care from the 20th May until the third week in September. I spent two weeks with them, packed them up for winter and left them. I found the queen in nearly every case down below in the old brood chamber. Three of these colonies had nine boxes each and I took off seven supers of capped honey from three of them. They have two brood chambers for the winter, the top one full of honey and more or less brood in the bottom one. I left them the first week in October.

Mr. Holtermann: What do the bees gather the honey from? A.—Alsike, fire weed, raspberry, Canadian thistles and wild flowers. There is no basswood up there.

Q.—Did you have an excluder in the bottom boxes? A.—No excluder at all; the queen had the run of everything. She apparently had gone up into the second box and back down again. I put them in winter cases and put another case on top, and packed them well with planer shavings. They were packed all summer, with one entrance at the bottom.

Q.—Would your honey grade A 1.? A.—I sold it for clover honey to a man named Moyer in Toronto. It was really the darkest honey I ever had up there, but when put in a glass bottle it looks good. It has a good body, and Mr. Moyer was well satisfied with it. Our main flow is from alsike clover, which grows up there very fine.

Q.—What was the object of alternating the brood chamber? A.—I did not have to go up so high.

Q.—What price did you get for your honey? A.—I sold it up north for thirty cents per pound. The entrance to the hive was eight inches long and about an inch wide. Where the dead bees were in front of the hive, that hive had one super full of honey. So far as I know there was no swarming, it was cold and raining. The roads are made of mud in that country, and if you get too far from the railway you are up against poor roads. On the low land you get frost from one to two weeks earlier than you will on a ridge. I am located on low land, but my bees are within flying distance of the high land, and often when everything is frozen with us the bees will bring in five pounds of honey a day from the high land. We generally get a frost the last week in August and that cuts off the honey flow, except the aster.

Q.—What is the soil? A.—Mostly clay, with lots of lime.

Q.—Why don't you try wintering in the cellar? A.—I haven't got a cellar, and the thing that bothers me is "Could I leave these bees in a cellar all winter and not look at them?" One man up there built a cellar under his house and dug the clay back three feet from his walls and filled that in with gravel, and put a drain in. It is very wet up there. I have a root house in the corner of the stable, and in that root house I dug a hole not more than three feet deep, and I got sufficient water out of that to water two horses and two head of cattle.

Q.—How much packing do you put around your cases? A.—This year I have about eight inches of packing around the sides and about five inches underneath and twelve or fifteen inches on top.

Q.—How low does the thermometer go? A.—Sometimes 60° below zero.

Q.—What kind of packing do you use? A.—Planer shavings, I keep the hives six inches from the ground.

Q.—Do the bees ever get a flight in January and February? A.—No, never. The first week in November is generally our last flight until the fourth week in April. I have seen the hives covered with snow five feet deep all winter. I do not have a closed fence, I have an opening between each board and in that way the snow drifts into the yard. During the past thirteen years I only remember the snow having a crust on it twice.

Q.—These supers that you put on were they drawn comb? A.—All drawn comb.

Q.—What size winter entrance did you use? A.—Just small enough to keep out the mice, and allow a couple of bees through at a time.

Q.—What kind of a cover do you have on the top of the hive? A.—A cloth cover, we have no forest leaves up there, if we had I would just as soon use them. Most of my bees are Italians. I had no opportunity to requeen this last season, and I do not know what queens are there, it was so cold when I was up that I did not have a chance to look.

Mr. Webster: You haven't seen any signs of foul brood up there yet? A.—Not that we know of.

SPRAYING AND ITS RELATION TO BEES.

Professor L. Caesar, Provincial Entomologist, Guelph.

For many years there has been much controversy as to whether spraying fruit trees while they are in bloom will kill bees or weaken bee colonies. I have as far as time permitted looked over the literature on this subject and find that F. M. Webster, one of the most famous of American Entomologists, conducted careful experiments by spraying raspberries, apples, plums and crab apples with Paris green while in full bloom and placing colonies of bees close by. Some of the trees and hives were completely enclosed by cheese cloth so that the bees could not escape. The conclusion he came to was that Paris green thus used killed, not only the bees themselves, but also the brood or larvae. Traces of arsenic were found in the dead bees on analysis.

A. J. Cook, a Michigan entomologist, reports several cases where colonies situated close to apple orchards sprayed while in bloom for the Plum Curculio, were either destroyed or greatly weakened by the poison.

In 1914, C. W. Woodworth, Professor of Entomology in California, placed a colony of bees in the middle of a forty acre orchard, and then sprayed the whole orchard while in bloom with arsenate of lead. The results he states were inconclusive, very few of the bees being killed and the colony very little, if any, weakened.

One of your own members, whose orchard I have visited several times, told me that he sprayed his orchard while in full bloom and could not see any evidence of injury to his colonies.

Last year James Troop, an Indiana entomologist, planned an extensive experiment to test this matter. I have not yet heard the results of this year's work, but last year's tests, he stated, indicated that bees may be killed by poison sprays applied to trees in full bloom.

We see, therefore, that some experimenters say the danger of poisoning by spraying during bloom is very small while others are convinced it is very great.

My own view, obtained chiefly by a process of reasoning, is that under favorable weather conditions, there must be great danger of bees becoming poisoned; because, even though in most blossoms, at least of the apple, the poison probably does not reach the nectaries, these being protected by the ring of stamens and the pistils, yet the poison is upon the stamens, exposed pollen and tips or stigmas of the pistils as well as upon the petals. Hence, the bee in forcing its way down to the nectaries comes into contact with some of this poison, and will thus gather small particles of it on its body along with the pollen. Then this pollen is removed and fed to the larvae, and some of them will be poisoned. Should there be wet weather soon after the spraying this, of course, would wash off much of the spray. Moreover, if the bees, because of unfavorable weather, did not feed for a few days after spraying, new bloom would open and thus be the chief attraction; so that in such a case it would be the earliest and latest bloom they worked upon and not the middle bloom thus avoiding the poison. This, then, might explain failure to poison in certain experiments.

Furthermore, for two possible reasons, the poison used to-day—arsenate of lead—may not be nearly so dangerous to bees as the former poisons, Paris green and London purple: First, these latter poisons were much quicker acting and much more soluble in water; second, they were not nearly so adhesive as arsenate of lead and so would more readily be gathered upon the insect's body, legs and mouth parts. In any case, most of the statements of serious injury I have been able to find were where Paris green was used.

Seeing that there is an element of doubt as to the injury done by spraying during full bloom, a further question arises as to whether there is any good reason for spraying at such a time. If you will look at our spray calendar you will find that the regular sprays which we recommend for apples are: First, just as the buds are ready to burst or are bursting; second just before the blossoms open; and third, immediately after the blossoms have all or nearly all fallen. When about eighty per cent. of the bloom is off the bees have left the orchard for better feeding grounds. Now these dates were all based upon a study of the way to obtain the best results in securing clean fruit and not with the thought of avoiding danger to the bees. I have no hesitation in saying that it is a mistake from the standpoint of economy and is quite unnecessary for the best results, to use a poison when the bloom is out. Once, perhaps, in ten years or so we find a season when the weather is very cold and backward for a couple of weeks after bloom has begun, and in such a case it would pay to use a fungicide, either lime-sulphur or bordeaux mixture, during the blooming period; but no poison should be added to this, because it is only increasing the cost of the spraying, since a poison must be used in any case as soon as possible after the blossoms fall.

I am quite in favor of the law against using a poison spray during bloom. If any two parties are in dispute on the necessity of such a spray, and will refer the matter to me, I feel confident I can persuade the offender that he is gaining nothing by breaking the law, and persuasion is, of course, usually better than force.

Now let us pass to the question of *sweetened poison sprays and sweetened poison baits and their effect upon bees.*

It will be good news to anyone who was anxious on this point to learn that further investigations have shown that for the Apple Maggot and the Cherry Fruit Flies, two very destructive insects, sweetening of any kind is not only not necessary, but is even injurious, because it adds nothing to effectiveness and causes the mixture to wash off much more quickly than where it is not added. We now recommend for these flies only arsenate of lead and water. A fungicide may be added if desired, but no molasses. I may say, however, that bees, in my observations extending over eight years, never fed upon these sprays, probably because they were applied at a time when there was plenty of flowers to satisfy their needs.

For Rose Chafer, an insect that occurs in June and early July, but only in very light and sandy places where there is much waste land, a sweetened poison spray is occasionally used and is the only thing that will save the grapes from destruction. I have heard no complaints of bees being injured in such cases.

There remains then, only the *sweetened poison baits used for destroying grasshoppers, and also cutworms and army worms.* These are made of Paris green, bran, molasses, lemons or oranges and water. They are applied very lightly over infested fields and always very early in the mornings for grasshoppers and very late in the evenings for cutworms and army worms. In the case of grasshoppers the fields infested are usually very old pastures or fields where there are no flowers or where the flowers have been eaten off by the grasshoppers. Cutworms usually act among vegetables where also there are no flowers at the season of attack. I have several times made these baits and applied them and have made tests to see whether they attracted the bees, but have never seen them feeding upon them. As the result of a suggestion in my letter, Professor Hunter, of Kansas, made a series of elaborate tests on this same point and he also found that there was not the least danger to bees though a whole county were treated with the mixture.

In my opinion, therefore, the whole danger to bees comes from the spraying of fruit trees and bush fruits when in full bloom and this is quite unnecessary and not in the interests of economy or of the best results to the fruit.

DISCUSSION.

Q.—Would there be as great danger to the bees from a dust spray as from an ordinary spray? A.—I think there would be, but there is no reason for applying the spray during the blossom season. The poison is very expensive and there is no use applying it when it will not give results.

MR. EVANS: Very few fruit growers spray now when the fruit is in bloom. The greatest danger I see is when the bloom has fallen, and they spray the limbs to kill insects, and the poison falls on a dandelion in bloom under the tree.

MR. GOODERHAM: Every once and a while we get a man who is stubborn, and he insists on spraying when the tree is in full bloom, and he will put on dust just at that time.

PROF. CAESAR: The best time to spray an apple orchard is just when the buds are ready to burst. It is necessary to start a little earlier so as to get through before the buds burst. The second spray should be just when the blossoms are on the point of bursting, and the third when ninety per cent. of the blossoms are off. The bees have stopped working at that time and have gone to better pastures.

A MEMBER: Is there any way of determining whether the bees are getting poison. I have noticed mine when I thought they were getting weaker, when they should be getting stronger.

PROF. CAESAR: With the arsenate of lead, I think it takes three days. If you use Paris green or white arsenate they will die in one-third of the time. The first day you go out to poison grasshoppers you think it is useless, but the second day you will find a lot dead, very often it takes four and five days to kill an insect.

A MEMBER: If these bees leave the hive and go to the orchard where there is poison, will they come back?

PROF. CAESAR: Once an ordinary insect has been poisoned, it will not lay any eggs. I doubt if a bee would return more than once.

MR. MILLEN: I know of a case where bees were kept near an orchard, and they were watched for a considerable length of time, and they made an average of from four to six trips per day.

PROF. CAESAR: It is possible for a chemist to determine whether a bee has been poisoned. Send to Dr. Shutt, Ottawa.

THE DEEP HIVE.

C. E. CHRYSLER, CHATHAM.

I have used the deep hive, and have used the shallow hive. I am using the deep hive now for my own private convenience, and will state the reasons why I use the deep hive. I have adopted the deep hive for the purpose of eliminating labor. In probably ninety-nine cases out of 100 where the brood chamber is wide enough it is sufficient, but a great many beekeepers advocate the prolific laying queen. Prolific laying queens are good, but the over prolific queens I find do not turn out as large a crop of honey as queens less inclined to lay eggs; and then again there are queens that do not lay enough. I consider this brood chamber, ten frame size and eleven and a quarter deep, or the Jumbo size, is sufficient in nearly all cases. I admit it is sometimes necessary to remove some. In making increase I find it is necessary to take out one or two frames. If you have one hundred colonies of bees and take one from out of each colony you will make ten full colonies of bees, and still have ten of an increase. You can increase in that manner without having any weak colonies. We have found the deep frames winter more successfully than the shallow frames. The shallow frames may be wintered successfully if the entrance is far enough from the bee.

In wintering bees it is necessary to have an air space below them, and from the inside to the outside entrance if possible. The outside entrance should be as small as possible, allowing only for sufficient space for flight of the bees in the winter time. That is one reason why I have adopted this size for my own use. If we had summer the year round I would just as soon use a hive eight inches deep, and I could get just as good results. With the deep frame there is less feeding to be done for the winter. Probably fifty per cent. of my colonies of bees need no feed this winter.

Q.—How about the quality of winter stores? A.—It is necessary to have good stores, but you can feed sugar syrup in here and it will never be noticed.

Q.—Will a colony of bees winter as well in that hive as in a packed case? A.—They do with me, I can only speak for myself. I use planer shavings, and some cork dust. I pack the bottom with cork dust because it will not soak up the water.

Q.—How much space have you at the side? A.—An inch and three quarters or an inch and a half.

Q.—Would you recommend that same amount of packing where the weather goes thirty below zero? A.—I could use packing and be successful if I had a foot all around the hive. The question of expense comes in, what are we willing to risk? A great many double walled hives have only an inch or three-quarters of an inch space. I arrived at this thickness to be more economical and to save labor, and I have never had any more loss with these hives than with the hives with more space. In 1907 we had a four hive packing box and used them until we decided to use these.

Mr. Holtermann: Are not you in an exceptionally warm part of the province?

Mr. Meyers: It is warmer at Chatham than it is with us at Stratford. I tried a double walled hive with about an inch of packing and I had very poor success. We get cold weather at Stratford.

Mr. Chrysler: We found it was not so much the walls or the packing as it was the entrance and the control of the ventilation. When we had porous packing we contracted this entrance to just about three-quarters of an inch area, or just sufficient to allow the bees to come out in fine weather in the winter. The bees should be allowed to get out on the fine days in winter. We find we have more success where we have porous packing above and a small entrance.

Q.—Have you ever tried a sealed cover with that entrance? A.—No. I would not want to try a sealed cover with a small entrance like that. A colony may have thirty or forty pounds of honey in the hive and they may consume ten or twelve pounds during a certain period, and you must provide for a certain amount of water that must come away from the bees, and it has got to go somewhere. One of the greatest factors in wintering is to get rid of the water. These bees consume up and then go back. They have always got food to go to, whereas in the shallower frame they are in the centre and move up, and they may starve with lots of honey in one end of the hive.

Mr. Meyers: Why should bees cluster in the centre of a Langstroth frame and cluster at the end in your frame? A.—I cannot answer that. The location of the entrance may account for a good deal of it. When they are not feeding and have plenty of honey they will cluster in the centre.

Mr. Meyers: Why would not they cluster in the centre of your frame? A.—You would think they would, but it does not happen so.

A Member: I think it depends on the entrance, and its location.

Q.—Do you cut them down for winter use? A.—If I have four combs I put in the whole number of frames regardless of contraction, although I could winter with four of these frames by putting a division board right through the centre and have a colony on each side. Four of these frames will winter a colony in our climate. You can put forty pounds of syrup in four frames.

Q.—What time would you put them in there to winter? A.—In September if you like. You could keep them in there the year round as far as that goes.

Q.—If you were putting two colonies in that hive for wintering, what time would you put them in? A.—I could do it at any time, as long as you can handle them and get them in there. I can put this division board in the centre. If I want to requeen my colonies, and in a few days one side will be queenless, you do not know which, and you do not care which. In four or five days you will know which side is queenless by taking out the frame to one side, and if you have queen cells you can stick one in the other side.

Q.—About what time do you do that? A.—I do not like to raise queens much after the 1st of August, although I have done it up until the middle of August. A queen will adhere to her side and not get killed provided there is an old queen on the other side. They will keep to their own entrance and they will not fight.

Mr. Holmes: How far below zero does the weather go in Chatham, and how long does it stay there? A.—I claim that above zero weather is more injurious to wintering bees in my climate than below zero. Our climate is damp, and it is harder to winter bees in a damp climate than it is where it is cold and dry. We used to lose more bees in our climate than they did where they had it colder, and where it continued cold all winter. The year before last was the coldest winter we have had, and it went as low as twenty below zero, and my bees wintered splendidly in this kind of a hive.

Q.—Were they covered over with snow? A.—Some of them were covered over, and the rest of them the snow was up to the top of the hive.

A Member: Will the bees move around in the hive when the temperature is about 55°? A.—Yes, in a cellar they can go any place in the hive to get their feed.

THE PRODUCTION OF HONEY.

R. F. Holtermann, Brantford.

It has been a good many years since it was my privilege to address the Ontario Beekeepers in Convention, and I want to tell you that during that time my views of life have changed a good deal. As I get up here this afternoon I am reminded of an address that Dr. James W. Robertson, of Ottawa, gave in my presence one day at the Ontario Agricultural College. Prof. Robertson is a man who has held the very highest places that agriculture can give in this Dominion, and in speaking to an audience upon a life's occupation, he said he felt a responsibility which I am feeling at the outset of my address. He said, "What shall it profit a man if he gains the whole world and loses himself?" We don't remember that enough for our own good, and if we are fathers we don't remember it enough for those who come after us. So, in speaking of beekeeping as an occupation in life I want to say that there is something higher and better in life than the making of money. Now, I was in a dentist's chair a couple of years ago, and the dentist who was a good friend of mine, said to me: "Some day I am going to keep bees. I am not going to be inside of four walls all my life. I want to get out, and I am going to keep bees." I said to him, "What do you know about beekeeping?" and he said, "Well, I don't know anything about it." I looked into his face and said, "If you have found an occupation that a man can make a success of without knowing anything about it you have found a business suitable for a fool." He looked at me for a moment quite seriously and he said, "Well, that is true." Beekeeping is an occupation, and honey production is an occupation, which calls for the very best efforts that a man can put forth. Looking back thirty-five or forty years, and, as some of you know, the first part of that time being connected with a bee supply business, a great number of failures can be found in the beekeeping industry among those who have attempted to follow it. Beekeeping is a business which requires certain characteristics. As to those who are inclined to do things long after they ought to have been done, such a trait is dangerous in beekeeping. In order to be successful in the production of honey, a person wants to be thorough; they want to have a disposition which will do things at the earliest possible moment rather than after they ought to have been done. In other words, I have often said about beekeeping that it is far better to be chasing your work than to have your work chasing you.

The amount of practical knowledge that a person requires in beekeeping varies very much. You and I have known, and perhaps know now, men who can undertake a certain work, knowing practically nothing about it; but they have the keenness of perception and they have the observation and practical sense enough to take some person who has been a success in that particular business, and they will follow his footsteps without question and make a success of it. Then as knowledge and experience increases, then and not until then, would they venture to launch out along lines of their own. That is one way to make a success of beekeeping; and let me say in all kindness that as a general rule a young man has not got the practical knowledge of life to realize that, and he is apt, much more apt, to launch out along his own lines of thought than one who has seen more of life. After all there is one way to learn and that is by practical experience.

Now, when we come to the production of honey, the best way I know of to begin is to start with one or two hives, read all the standard works possible on this subject, and try to get a little help from a local beekeeper who generally is willing to help—but not always. Another way is to spend one or two seasons with a practical beekeeper and learn the business in that way. Now, after a man or a woman has decided to keep bees, if it is their intention to make a life's occupation of it, the question arises immediately of locality. There is a tremendous difference in localities. I know localities where men could be successful in producing bees, and I know other localities where it is a good deal more difficult to get bees up to the numerical strength that is desirable to produce a crop of honey. As a rule soil that is light and where you have variations in the ground,—hills and dales,—in these localities as a rule you get a greater variety of bloom, but you do not get the requirements for producing a surplus honey growth as well as you do in localities having heavier soil. I remember an address I once heard on the production of honey, and that gentleman said that in his estimation beets produced on light soil did not have the same percentage of sugar in them as those produced on heavier soil; and putting that in connection with what I had observed I came to the conclusion that the ideal soil for surplus honey production was a heavier soil rather than a light, and so for honey production I would sooner go upon a heavier soil than upon a lighter. If I want to produce many queens and rear bees I would prefer going on the light soil. That is all perhaps that I want to say about the soil.

It is a strange thing that the hive itself is so often such a touchy question. But you all know that there isn't a hive that is worth making that is not patented, and we can have our choice as far as that feature is concerned; and while there are such tremendous differences as to what is the best hive it is almost a dangerous question to touch. I am a person who at one time had the eight-frame Langstroth hive, and there are not very many advocating the eight-frame Langstroth hive who can tell me very much about it, because I have tried it. Then we have the ten-frame Langstroth hive, and the twelve-frame Langstroth, and we have the hive even larger than that. I am in favor of a large hive, and have been for fifteen years or more and I remember very well telling the editor of the well-known and most prominent bee journal in the world that when they came from an eight-frame to a ten-frame Langstroth hive they would just as surely change from a ten-frame to a twelve-frame. This matter of advocating the ten-frame Langstroth hive at that time was done in this way. There was a consulation among the various beekeepers, and a decision was mutually arrived at that they were going to advocate the ten-frame Langstroth hive. Now, as you all know who have been following recent developments in connection with beekeeping, it is the general conclusion to-day that a ten-frame Langstroth hive is too small for a beekeeper to use. The queen is able to occupy much more room than many beekeepers are willing to give her credit for. In speaking of this matter of the amount of room that a queen can occupy, let me say that the very best queens that I have seen came from Texas and from Missouri that were kept in a twelve-frame brood chamber in such a way that there wasn't three pounds of honey in the whole twelve-frames. At Cornell University last winter I confess I was almost ashamed to admit that I had only twelve-frame hives. The question was asked me in correspondence, would you to-day if you had to start over again use twelve-frame Langstroth hives. I do not know that I am just exactly prepared to answer that question to-day, but I want to assure you of one thing, that I never would think of using a hive that had a capacity of less than twelve Langstroth frames now. There are various arguments used against these twelve-frame hives, and one is in connection with the brood chamber. You all know perfectly well that it is a great deal more difficult to get a queen to go from one chamber into the other than it is to get her to go sideways, and I do not think that the least expenditure of labor and the best results can be obtained by having a double brood chamber. Now, when it comes to the Jumbo frame, which is practically the Langstroth frame only deeper, I have an objection to using a frame in the brood chamber which is of different size to the combs and the rest of the hive, because you are perfectly well aware that time and time again there are reasons why you would like to take the comb from the brood chamber and put it into the upper story or *vice versa,* and I believe you can get the least expenditure of labor and the best results by using the one sized frame in the brood chamber and in the super.

Now, after using this hive for years, let me say that in seasons where your flow is very short and where your bees have not supplied up as well as usual, the twelve-frame Langstroth hive will give you less honey upon the brood chamber than a smaller hive. It is only rare seasons where that is the case.

The method of extracting honey has changed considerably in late years and we now know that the right system is to allow all surplus honey to remain in the hive until the honey season is through, and then remove it to give that added room. As the bees get numerically stronger, you give them that added room to work, and so you can keep your bees in a better way, and you will afterwards have a better article to put upon the market.

When it comes to the numerical strength of the colony the great aim in keeping bees together is not simply to force them to remain in a certain hive, but the aim is to keep bees from swarming, keeping them together contentedly, and in that way you can produce the largest crop of surplus honey. I have tried to keep bees together by breaking down queen cells, and do it now for that matter—week after week breaking down queen cells feeling that the next time I would go there they would not have the swarming impulse. That kind of management, however, always results in a smaller crop of honey from that colony. The way to keep bees from swarming is to have proper combs. There are a great many combs in hives that have no business to be there. I think it is an objectionable feature to have the bees tearing down the cells, because there are too many in the hive, the beekeeper should do that for them.

Then as to bees, we are pretty well all agreed that the black bee has no business in the beekeeping world where European foul brood can be found. There is a great difference in the strains of Italian bees. There have been times when I thought I knew where to buy bees and queens, but to be honest and frank with you to-day I am totally at sea as to know where to get the best bees. It makes a great difference the kind of bees we have, and after visiting New York State and making a study of European foul brood, I have come to this conclusion at least, that we have no business with what is called the "Golden Italian" bees, and we would be better off with a darker strain of them.

Now, in order to keep down swarming as much as possible the supers should be put on in plenty of time. When we go back to the literature of the past we read that when the bees clear out the combs—the cells in the brood chambers from honey—that is the time to put the upper storeys on. But that is now considered too late. It should be done before that, and when I put an upper storey on before the clover season opens I always do that and leave out the queen excluder.

As to the room the bees should have, it should be given them ahead of their requirements, and the question may legitimately be asked should it be given above or below the first super. Well, we know that bees do a certain amount of cleaning and fixing up of comb when that comb is first put upon the hive. I do not like to put these combs on top, because it make a change in the hives that I don't like, so I take off the combs in that first storey and put them in under the upper storey, and these combs go directly on top of the combs which are practically in the storey below. So on one side you have combs which the bees have already had in the hive, and on the other side you have the new combs, and in that way I think that added room can be given with the least disturbance to the colony.

While speaking of the position of the combs in the hives there are a great many beekeepers who are not careful enough in this connection to see when their combs go into the hives that they are in the same position they were in before. They put them back, and it does not make one particle of difference where these combs were before. That is poor management, and it tends to anger on the part of the bees, and may even create a disposition to leave that hive and swarm and go somewhere else. You may as well take a good housekeeper, clean her house from cellar to attic, and then put the kitchen stove in the parlor and the piano in the kitchen, as to expect that bees are going to be content with that sort of thing. What we should aim to do is to put the combs in the same position as they were in the hive before and by doing that you have less trouble from your bees.

Another thing when we are managing colonies and going through the hives—and it is necessary to go through these hives occasionally, and at times when there may be in there ten to twenty pounds—the less time that we spend on each individual hive the less will be the time lost by that colony until it goes to work again. These are points that we should all look after. It is detrimental to spend a long time over any hive; get through as quickly as possible and go on to another hive, and if two can work on a hive together it is far better than only one.

In the production of honey we tier up and tier up, and the question can legitimately be asked what about shade and ventilation. If you have an apple tree, which comes into leaf in our part of the country around the 25th of May, that can shelter a colony very nicely and will do it no harm. I know some beekeepers claim that shade is not necessary at all. One thing I know is that shade has nothing to do whatever with the time that a colony goes to work in the morning, and I will prove that to you. When bees are working at basswood, for instance, you have awakened up in the morning at break of day and heard a roaring in the bee yard, and when you went out you found the bees at the basswood and the sun wasn't up. The sun has nothing to do with when colonies start to work. Now as to ventilation, if a hive has an entrance of say an inch and three-eighths the whole width of the hive the bee can fly into the entrance and light on the cluster which is on the bottom of the combs. That is a valuable feature, because if the bee has to stop at the entrance and run in that distance, it loses a certain amount of time; then that is also abundance of ventilation at the entrance of the hive. There is no objection to give it a certain amount of ventilation at the top of the hive. I have ventilating slides which slide back and forward in the supers, and when there is particularly hot weather I open these and that adds very much to the ventilation that the bees can get. They never use that ventilator as an entrance as long as the super is a super. By that I mean that if you ever see a colony working through the ventilator then you can come to the conclusion that the queen is there, and it is a super no longer, but it is a brood chamber, and then, and then only, will they use that for an entrance.

In the production of honey I am not an advocate of equalizing colonies. Let a colony do its very best, but if I equalize colonies I do it in this way. I take from the equalizing colony that may have some tendency to swarm as can be seen in the hive and I give these combs into the weakest colony bringing it up to the required strength for honey production.

When it comes to extracting honey, I have built four different bee houses. Two of them were extensive ones, but the other two were comparatively cheap. If circumstances should arise which would make it advisable that I leave a certain place whereon I have a costly bee-house I would probably do so at a loss; so to-day what I do is simply make use of the building which is upon the ground and make it do the best way. I can and that is my extracting house now. I know that ten years ago I would much sooner have a visitor come around and see my bee-house than I would have him to-day, simply because it is not a very handsome building, but it answers the purpose; and let me say in all the work of honey production a man wants to discriminate between work which is essential and that which is not essential. I may say that since the war has been on I have never put a bit of paint upon a hive among any of our bees. Before that I used to paint them every two years. I used to level them up with a spirit level and line them up with a line and have a nice orderly looking bee yard, and it is nice to have them that way. To have them that way is an incentive to do other things well; but when we have to cut out our work to conform with the scarcity of labor, then it is well to judge between that which is necessary to produce the honey and that which is merely for the purpose of pleasing the eye. For instance, whether you have hives lined up or not has no effect upon your honey production. Where you have a hive tipped, more or less, forward is also a secondary matter, but when you have a hive standing tipped sideways then you are liable to get into trouble owing to gravitation, and your combs are apt to get into a position that they have no business to be in.

Then as to extracting. I do not wish to advocate this, but we have a truck now and from the most distant points we can haul; or, rather we can't haul the honey fast enough for the men working in the extracting house and that is our present system, and in doing that we are hauling our honey to the station because the extracting house is close to the station.

You may ask me in connection with combs—I have stood combs out as well as you and have let bees rob them out, but I am not doing that any more. What I do is I look for my strongest colonies and pile them up high, as high as possible and let the bees clean them out. One reason why I have abandoned the old system is because there is a certain amount of foul brood in our section of the country, and I am afraid on that account. It always looks to me like a sloppy way to do it, but I do not know of any remedy except to pile them up upon the strongest colonies.

When it comes to honey production the question arises of how to keep the honey clear of wax particles and so on. We put our honey in three-quarter, two and one-half and five pound tins, and it requires a good deal of work. The way we do it is to pump the honey into the tanks six feet high and three feet in diameter, holding about 3,200 pounds. We allow that to stand for, perhaps, a week and then skim the top of that and fill from that. Now, in pumping, no doubt you all know that the honey that you run into that tank will crystalize much more rapidly than if you did not pump it, and the result is that you cannot as a rule depend upon having honey stand in the tanks for two weeks without getting that crystalization. That is the one great objection to honey pumping.

In connection with securing apicultural education there is no doubt that for a beekeeper with a very moderate experience wanting to go into the business extensively, the special course in beekeeping at the Ontario Agricultural College is an excellent plan. Also for the one who wants to begin in a small way, it will form the basis in theory of that which afterwards can be followed up by wider practical experience.

MR. CHRYSLER: I claim that when you leave your honey in the hives until the last of the season and chilly nights come along that honey will more or less deteriorate in the top storeys. I think that is objectionable.

MR. HOLTERMANN: I was not speaking of chilly nights. As long as honey is coming in from the field we are not going to have nights which tend to chill the combs in the hives, and another thing the bees will cover these combs until the honey flow is over.

MR. HARKNESS: What are you going to do where you have a buckwheat crop immediately following a clover crop?

MR. HOLTERMANN: I would advise you to get a tremendous hustle on.

MR. CHRYSLER: Do you advocate the super only next to the brood chamber?

MR. HOLTERMANN: No, what I tried to make plain was where you put say, ten combs in a twelve frame space the advantage is that number is just right. In a ten-frame hive eight is not enough and nine is too much, but in a twelve-frame ten is just the right number. I take five of these out and put five combs in that have not been in the hive before alongside of them.

Mr. Evans: You have lots of help then?

Mr. Holtermann: Well, we aim to do a certain thing and we come as near as we can to it. A beekeeper must work rapidly. I know beekeepers who will get around at nine or so in the morning. I think the right thing for a beekeeper is to get on the ground ready for work as early as he can and work rapidly, but I never have believed in long hours.

Mr. Evans: How late do you work at night?

Mr. Holtermann: I make it a point no matter if we are one or ten miles from home always to be home for supper at six o'clock, but our noon hour, which is the best time of the day, we used to take our meals with the farmers. We don't do that any longer because that means delay. Sometimes the meal is not ready, so now we carry our dinners with us and we sit down and eat it, and get up and go to work again. I have a man working for me who has been with me four seasons, and another three seasons, so that is a pretty good indication that the men are satisfied.

Mr. Evans: What time do you start work?

Mr. Holtermann: Well, as a rule you can begin to work with bees at half past seven. It may not be quite as pleasant, but there is no reason why every beekeeper should not commence work at half past seven.

Mr. Evans: I use the ten-frame Langstroth, and I am quite satisfied with it and do not intend to change. In order to produce plenty of bees I believe in increasing the size of your hive as early in the season as possible, just as soon as it is safe, and there is no danger of brood being chilled, I put on a second storey of old combs, and I have never found any evil results from it. It gives twenty combs, and that is enough for any queen that ever lived.

As to swarming, when it comes to the time that clover begins to blossom in June, I go to work and confine the queen to the lower storey and leave her three combs of eggs, and then fill that bottom with empty combs or foundation, and in the second storey put all the combs that have no brood and keep your brood up in the third storey, that gives you space to store away thirteen combs with brood in them. This is a simple and easy way to prevent swarming. I have not had a swarm this year. When you go over that in about nine days all you have to do is to destroy any queen cells. Of course, you reduce the capacity of the room for the queen to lay but that doesn't matter.

Mr. Holtermann: The objection I have to that method is because there is too much pulling out of those combs to suit me. When you take them out in the fall of the year there is a lot of pollen, and if those pollen cells harden there the bees are not able to get them out.

Mr. Kirby: It seems to me that great word "locality" has something to do with a beekeeper's selection of a hive. I have two eight-frame hives and one ten-frame hive, and I have never been able to do as well or get as much honey out of the ten-frame as I have been with the eight-frame, and I do not want any more ten-frame hives.

Mr. Holtermann: I want to answer that point right there. If you keep your bees from swarming you will have stronger colonies and more uniform colonies, and if you put bees in an eight-frame hive and then change them to a ten-frame hive that season you will not get as good results from that colony.

FEEDING AND STIMULATIVE FEEDING.

HARRY W. JONES, BEDFORD, QUE.

In dealing with the topic of feeding and stimulative feeding I wish to deal with the proposition in order as the operations would take place, viz., fall feeding for stores and for stimulation, winter feeding for stores and spring feeding for stimulation.

At the close of the season of active honey gathering the prudent beekeeper looks over his colonies to make certain that all are in good order for wintering. Those which fall below the minimum are marked for further attention. In our own apiaries when beginning preparations for the winter months we begin to look them over to estimate the stores by the middle of September. Of course, at that time of the season there is not very much honey coming in, and as we make a practice of opening each hive and looking the frames over one by one, we find it necessary to be careful about robbing. We find that we get along very nicely without risking a disturbance by doing the work early in the morning, and in the latter part of the day, and by keeping all frames of honey or other sweet stuff well under cover. It is advisable to take extra precautions to avoid any possibility of robbers getting a start, because once they have succeeded in robbing a colony they will be ever on the alert to find another weak stock to attack. As the colonies are looked over the amount which they have is noted in crayon on the outside front of the hive, and we feed enough to bring the combined weight of stores up to twenty-five pounds per colony. Generally each year as the fall comes on we have more or less rain towards the close of September and in early October, and we have come to regard this rainy spell as a specially good time for feeding our bees. The weather is warm enough, so that they take down the syrup and empty the feeders quickly, and the rainy weather has the tendency, as you all know, to keep bees pretty well in their own hives and tending to the business of ripening the syrup. We try to get our feeding all done before steady cool nights come on, when we find they take the syrup down very slowly and do not ripen it as well. In actual operation we go at the job in this way. We have a large boiler such as farmers use for heating feed for stock, and which consists of a big iron kettle on top of a small stove. We fill this up with about the quantity of water that we expect to use and heat the water until it is boiling hot—the hotter the water is the quicker it will melt the sugar and make a syrup. For mixing the sugar and water into a syrup we have a vat made of galvanized iron about 7 feet long, eighteen inches deep and eighteen inches wide, made with a rounding bottom. The reason why a rounding bottom is to be preferred is because, in stirring up the sugar in the water the sugar has a tendency to settle all the time and when it settles it is rather hard to stir, with a rounding bottom it is always settling to the lower level and with a wooden paddle about three feet long the whole mass can be stirred very easily by shoving the paddle from end to end across the bottom. For winter feed we use a proportion of slightly over two to one by weight, putting in about forty-five pounds of boiling water to a hundred pound sack of fine granulated, white cane sugar. In late feeding, when the bees do not have much time to ripen the syrup, it is advisable to mix in about a tablespoonful of salt and two tablespoonfuls of good vinegar to counteract any tendency to granulation. The ordinary granulated sugar can be purchased in three grades, known respectively as fine, medium and standard, and it is a fact well worth while remembering when buying sugar for this purpose that the finest grade of granulation is much to be preferred as it absorbs the water and melts into a syrup much more quickly than the coarser grades of refining will. For winter feeding in bulk we use the standard Miller feeder, and immediately before putting the syrup on the hives these are distributed, one or two to a hive as may be required; then with a large sized watering can we go from hive to hive filling each feeder with the required amount. It may be worthy of remark here that it is necessary to allow the syrup to cool somewhat in the vat before pouring into the feeders, as it would otherwise melt the waterproofing on them. In filling the feeder if a few drops are allowed to trickle down the opening to attract the bees they come up much more quickly to take it down. Feeding at the time of year that we endeavor to, the bees will take down twenty pounds of syrup in twenty-four hours so that it is not a very long undertaking to feed a couple of hundred colonies. Feeding a large quantity in bulk the bees take it down and store it away quickly. Building up the stores of a colony by feeding syrup is at the best a rather messy kind of an undertaking, and the ideal way is to use combs of honey. By using these one can go from colony to colony looking them over and adjusting the stores on the spot. At the present price of honey it is an expensive way to feed, but from the point of view of saving time and of doing the job at one operation making up a deficency in stores with combs of honey is the method par excellence. From time to time in our bee journals the question has been raised of the comparative excellence of honey or sugar syrup stores for wintering. Speaking from the results obtained in our own apiaries I am of the opinion that well ripened sugar syrup stores are to be preferred rather than honey stores. I have the belief that bulk for bulk a colony will consume less sugar syrup stores during the winter than they will honey stores. One reason for this may be that the sugar stores are of an even, uniform quality throughout while the honey stores are made up of a variety of honey gathered from different sources some kinds of which may be more stimulating or less nourishing than an equivalent weight of syrup.

There is another angle to fall feeding than that of simply bringing the weight of food supplies up to the minimum for winter, and that is the case of colonies which are weak in bees towards the close of the natural honey flow. What I have particularly in mind are colonies which have been built up from pound packages, or nuclei that were made late in the season and which are not strong enough in young bees to have good prospects of wintering. If these colonies which are under-strength have a vigorous queen they can be taken in hand about the first of September when the tendency of the honey flow and the end of the season have the effect of making the queen restrict the area of brood, and by feeding daily a small quantity of syrup a good strong force of young bees can be developed by the first of October. The idea, of course, is to feed enough to induce the queen to continue laying as nearly as possible up to the level which she maintained in August. With a steady flow of honey, or its equivalent, brood rearing goes on without slackening until well into the close of the month when cooler nights begin to have a checking effect. The Miller feeder can be used for stimulative feeding, but it is not a convenient or suitable one for this use, as it is more particularly adapted to supply large quantities all at once. The best kind of feeder to use is the tin pail style with the perforated cover or the Alexander feeder which goes underneath the hive. A weaker syrup can be fed for this purpose than is used for winter purposes, and a proportion of eight parts sugar to ten parts water goes very nicely. It is advisable to use white granulated sugar for making the syrup at this season of the year as some of this may be stored and thus used for winter. In feeding in this way for fall stimulation weak colonies can be brought up to strength and have a good force of young bees to start the coming spring with.

It sometimes happens that, owing to a shortage of sugar supplies or some unforeseen obstacles, some colonies which need feeding are neglected until the weather becomes too cool for them to take down syrup and they cluster up tightly between the frames. When bees form their cluster in this way for protection during the cold months, it is a mistake to try to have them take down syrup, because even though they may take it down, they do not have the opportunity to ripen it, and as a matter of fact it is a practical impossibility to feed a yard after steady cold weather has set in. Under the circumstances as outlined the only practical recourse of the beekeeper is to supply stores by means of winter candy. This winter candy is really the sugar syrup boiled until the watery portion has been about all evaporated and the sugar remains in the form of a crystal clear solid. Most beekeepers are familiar with the process of making this candy which consists of converting the granulated sugar into a syrup, taking care to thoroughly dissolve all grains of sugar. This syrup is then put into a kettle of iron or graniteware and boiled until it becomes thick. The usual test to determine the hardness of the candy is to drop a spoonful into cold water, when it hardens up and shows a tendency to be brittle the finishing point has been reached. There are a number of ways in which this can be fed to the bees. An empty frame can be laid down with a piece of oiled paper tacked to one side, the candy can be poured into the frame and allowed to cool, the paper is then taken off and the candy is supplied to them by simply removing an empty frame and putting in the frame with candy. Another way which is very handy and better in some respects than the one just described is to let the candy harden in a shallow dish, then turn the dish upside down over the cluster of bees renewing the candy from time to time as needed. They will then gnaw out the candy and get along very well on it, seemingly almost as well as on syrup. In preparing all kinds of syrup great care must be exercised to prevent scorching, however slightly, as syrup that has been burnt in any way is sure death to bees when used as winter stores.

Besides the methods of feeding in the fall and winter which have been outlined there are the methods of spring feeding for stores and for stimulation. The reason for spring feeding for stores is generally because an insufficient amount was given in the preceding fall or because the spring weather has been prolonged to such a length that the stores which are otherwise sufficient have been used up. In spring feeding for shortage of stores one can use the candy method to good advantage if it is early in the spring before bees are flying freely. A two-to-one syrup can be used if the bees get an occasional chance to fly. Later on as warm weather comes this syrup can be reduced to an even proportion and used for stimulative feeding. It is by far the best plan, however, to feed the bees sufficient in the fall to give them enough to insure that they will have plenty to last until the middle of May at the least, when one can rely with some assurance upon a honey flow from some source, such as apple blossoms or dandelions to keep them going. Fall stores are by all means the best way of providing for the spring demands of brood rearing and for food.

Several years ago stimulative feeding in the spring was a very prominent topic for discussion in the journals, and like a great many other things which come before us from time to time it was widely talked over and then made way for the next idea that cropped up. Speaking in a general way with bees that are well fed in the fall and are in a locality where there is an early flow from some minor source that gets the queen well started at brood rearing, and supplies the bees steadily with honey to keep brood rearing from slackening, there is not very much to be gained by practising stimulative feeding. There is no object in having the bees over full strength before the main honey flow begins, as they will only waste themselves in swarming and be in a disorganized condition when they should be at their best. On the other hand there are some locations where there is practically no preliminary honey flow a month or so before the principal source of honey develops, and in circumstances like this stimulative feeding is certainly a profitable operation. A regular steady flow each day encourages the queen to enlarge the brood nest, and the uninterrupted supply insures an evenly increasing supply of eggs as the main honey flow approaches. To obtain the best results from stimulative feeding in the fall, as well as in the spring, the hive should be made as warm as possible. In the spring, particularly, when cold nights are inclined to linger on, the hive should be protected, and it is at this time of the year that the double walled hive is especially valuable as it keeps the cold out and retains the warmth of the cluster when it is especially needed. For stimulative use as described any of the standard feeders with a small capacity are to be preferred, something along the lines of the Alexander feeder or any of the various types of entrance feeders made of glass jars. The division board feeder can be used to very good advantage also. It is a big saving in time to use some type of feeder which can be quickly filled without disturbing the bees and which easily shows the amount of syrup which it contains. The principle underlying stimulative feeding is, of course, to supply a small quantity of feed daily, not a large quantity all at once at intervals of several days. For this reason the feeders with large capacity which are used in the fall are not so handy to use in the spring.

I have just been speaking of stimulative feeding from the point of view of what we might call inside feeding: that is, supplying syrup from feeders inside the hive. There is another way of getting feed to the bees, and that is by supplying in pails in the open air and letting the bees come and get it. This outdoor way as we might call it can not be practiced as early as the inside method, as the bees, of course, have to carry the syrup from the pails to their hives and it is not advisable to encourage too much flying about in chilly weather when there is a likelihood of the bees becoming chilled and not getting back to their hive. For this reason it is better to wait until we see that the bees are beginning to gather pollen before we start outdoor feeding. In our own yards when the season is inclined to be late we use this open air method to stimulate—we aim to feed enough and to spare in the fall so that spring feeding for stores will not be necessary. It is a pretty well known fact, however, that the queen will not speed up egg laying until a well defined source of honey has opened up and it is with this idea in mind that we practise stimulative feeding. We aim to get enough syrup taken up by each colony daily to induce the queen to expand the brood nest as if a regular honey flow were on. In making up the quantity of feed daily we base our estimate on a pound of syrup per colony, and in the early part of the season we make an even mixture part for part of sugar and water. In open air feeding each colony benefits in proportion to its strength, the stronger colony getting its proportion of feed in a corresponding manner as the smaller one. It will be found that a pound of syrup per day is not altogether enough to keep them supplied, and for what they lack they will draw on the stores which they already have in the hive. This small quantity of feed serves the purpose of speeding up the queen and induces the bees to use up a portion of their winter stores and consequently enlarges the brood nest at the same time. In feeding in this way we wait until we notice that they are beginning to bring in pollen before we start. and for the first two or three days we give a much richer mixture of feed than we do after the bees have got well used to getting syrup in this manner.

For spring feeding we have always used white sugar of the same quality as we use in the fall. there is no reason, however, why a cheaper grade of sweet can not be used as get as good results. A year or two ago a lot of beekeepers were obliged to try sugar crystals as a substitute for white sugar, unobtainable at that time, and I think that these crystals would be all right to use in the spring even if they were not all right to use as winter stores. I know of one instance where a farmer makes an annual practice of feeding a diluted mixture of maple syrup and water, and seems to get some measure of success, and while I do not recommend using maple syrup for this purpose, I believe, that a low grade sweet can be used to good advantage.

As I have remarked before, it is our practice to feed for stimulation when the spring is late, and in actual practice we do it in this way. We have a sufficient number of pails holding about fifteen pounds of syrup each to distribute through a yard which we wish to feed. These pails have circular floats in them to prevent the bees from drowning. These floats are of wood, and have a number of small sized holes bored through them. The pails are set out two or three to a row—our hives are arranged in rows facing east and west—and we fill them with syrup each morning. None of the hive entrances are distant more than twelve or fifteen feet from the nearest pail, and the bees are not obliged to fly any distance to get the feed. These pails are filled about the middle of the forenoon after the sun is well up, and by the latter part of the afternoon the bees have emptied them and flying is about over with by the time, the cool of the evening is commencing. In a backward season we have had very good results from feeding in this way. A source of difficulty is sometimes provided by the neighbors' bees who may be within less than three-quarters or half a mile distance. When there is another yard as near by as this, it would be only fair if the owner was to bear a small proportion of the cost of the sugar used in making the syrup. Bees will come from a greater distance than this, of course, in search of sweets, but the amount of syrup which they will take away when their hives are a mile or more away, is very small in relation to the total quantity.

In preparing a paper on such a general topic as the one which I have dealt with I have endeavored to outline the various methods with such observations as experience has suggested; but, in conclusion I wish to go on record as suggesting that the best thing is not to have any feeding to do, and in case that feeding is necessary, then feed early so that the bees can ripen the syrup thoroughly and feed enough to make sure that the bees have enough to last them. Then do not disturb the hives until warm weather sets in and they should winter in fine shape as far as the feeding is concerned.

MR. CALDWELL: I have been feeding my bees from a ten pound pail and letting it go at that. I would like to know your opinion on that subject.

MR. HOLTERMANN: It is a pretty difficult thing to say just how much honey is going to be left next spring. I think we that are troubled with disease hate to put the honey back into the hive. I believe myself the proper thing to do is to give them plenty in the fall and let them go. With my good friend, Mr. Jones I believe in feeding as late in the fall as possible rather than early, and I will tell you why. I believe that when the weather is clear there is less waste, and where you feed a limited amount then they will be sure to have that sugar syrup for winter, while otherwise they might consume it and go at the honey. In my opinion sugar syrup is the very best kind of winter store you can get.

Mr. Jones: To further carry out this question, we make it a point of feeding enough in the fall to carry our bees through. The only feeding we would do in the spring is where there is no natural supply.

Mr. Holtermann: What is the first thing your bees feed on in the spring?

Mr. Jones: Well, the first thing generally are wild flowers in the woods, although we did not have much of that this year.

Mr. Holtermann: You would not advocate stimulating feed where you have a natural source of feed?

Mr. Jones: No, we would not.

Mr. Beuglass: There may be a certain time in the spring between crops when it would be necessary to feed—say between dandelions and other bloom, apple bloom; then between apple bloom and raspberry.

Mr. Webster: In preparing your feed, of course, you heat the water and put it in a tank. Then drop in the sugar and you will find that sugar settles to the bottom. I find a turnip hoe is very handy to use then.

Mr. Whiteside: Did I understand you to say that you did not approve of sugar crystals for winter feeding?

Mr. Jones: I think it has been pretty well proven during the last few years that they are not as satisfactory.

Mr. Whiteside: We used them last year and our bees wintered splendidly.

Mr. Jones: Of course last year was an unusually mild winter. I do not think if it was the usual cold winter you would have gotten as good results, perhaps.

Mr. Holmes: Do you use absolutely pure cane sugar or do you admit the feeding of beet sugar?

Mr. Jones: In placing our orders for sugar we always buy the cane sugar. The beet sugar may be as good as the other, but we have had no experience with it.

Mr. Holtermann: I have never used beet sugar, although I know a beekeeper tried it last winter and they wintered in the cellar, and he said the bees came through successfully. I have had the same feeling as Mr. Jones, that I preferred feeding what I knew was safe.

Miss Fowls: The beet sugar that we used to have was quite different than it is at present. It is now refined so that I doubt if you were to test the two whether you could tell them apart.

Mr. Chrysler: I have used beet sugar several times and you cannot tell the difference. In fact there is no difference. Some time back the beet sugar was not refined to the same perfection it is to-day, and I would not give you two cents difference between beet sugar and cane sugar.

Mr. Holtermann: I think if you have the two together you will find that the beet sugar is a little bluer; I believe they have to put considerable of this in.

Mr. Holmes: My reason for asking this question was because I was unable to get cane sugar this fall, and I do not feel too well about it—that is feeding beet sugar. But I have marked the colonies that I am feeding it to and will be able to note any difference in the spring.

Mr. Holtermann: What is called cane sugar in chemistry may be made from cane or beets. That is why it is labelled cane sugar, or why it is possible for the sugar companies to put that marking on their bags.

Mr. Kirby: A year ago I got a sack of this raw sugar for experimental purposes and fed it to one colony. The colony wintered splendidly and came through all right. I have also used it half and half and find it is all right.

Mr. Whiteside: I tried it last year, and my bees would not touch it. They would take up the cane sugar but would not touch the beet.

Mr. Beuglass: In reference to raw sugar there is a tremendous difference in the quality. We buy a high grade of raw sugar. My experience has been that they winter just as well on this sugar as on the other. Take in the severe winter we had in the year before last, we wintered half of our home yard on raw sugar and the other on our standard granulated sugar, and at the end of the winter the difference was quite perceptible in favor of those fed with the raw sugar. I am always careful to get a high grade of raw suger however.

Mr. Caldwell: In reference to raw sugar I fed sixty hives with this article. I was wintering in the cellar, and if I had not got those hives out on the 18th of February I would have lost every one of them.

Mr. Holtermann: There is such a tremendous difference in raw sugar when you order it you never know what you are going to get. I would not be bothered feeding raw sugar.

Mr. Beuglass: Last year I fed raw sugar. I did not know what you were talking about when you were saying crystals. I fed about seventy colonies last fall with raw sugar, and I would notice when I would fill the ten pound pail of this syrup, and take the cover off, I would notice about an eighth of an inch of pure dirt, just muck, on the lid and in the spring I took out just about thirty live colonies, and I declared up and down that that was the last raw sugar I would use. I figured it cost me just about $1,500. I purchased granulated sugar this fall.

The Chairman: I think we have covered this question very thoroughly. I might state here that we tried this out at the College, using raw sugar, and in comparing it with the cane sugar we found just a little difference in favor of the cane sugar.

EXPERIMENTAL WORK IN BEEKEEPING.

C. B. Gooderham, B.S.A., Assistant Apiarist, Central Experimental Farm.

Experimental work is the testing out or investigation of the value of different ideas that are brought forward to aid the advancement of any line of work. Progress and efficiency in all branches of industry are based on the experimental work that has been, and is being carried on at the present time.

The present advanced state of beekeeping is entirely due to the experimental work done by a few enthusiastic beekeepers in the past few years, and also by especially trained men employed by various government departments for investigational work. There is still a great field for this kind of work in beekeeping; this is clearly shown by the various bee journals in which we see different ideas cropping up in different places, and discussions on the different methods used by different beekeepers to obtain the same end.

Investigational work needs close observation at all times, for success depends entirely upon the accuracy of the data collected. Some experiments will give fairly definite results in one season, but these cannot always be considered reliable. Most experimental work must be carried on over a number of years in order to get results that can be relied upon, this means considerable time and expense which makes it impossible for the commercial beekeeper to do much original experimental work. The Federal and Provincial Departments of Agriculture, however, have established experimental apiaries for this kind of work, and it is my intention to give you a brief outline of the work that is being done in the apiary at the Experimental Farm at Ottawa. The main idea underlying all our work there is simplicity with a view to obtaining the maximum production with a minimum amount of labor and other expenses.

SWARM CONTROL EXPERIMENTS.

In the summer of 1918, five colonies of bees were treated by the plan of raising all except one comb of young brood from the lower to an upper chamber with one super of empty combs between. The queen was left below with the one frame of brood. This treatment was given at the time the first active queen cells were found in June at the commencement of the honey flow from alsike clover. All colonies had active queen cells present in the lower chamber seven days after treatment, these were destroyed. Capped queen cells were present fourteen days after treatment, and one colony swarmed at that time. Two colonies that had wintered outside, and three wintered in the cellar were chosen for this test. The same experiment was continued during the past season with four colonies. They were all treated at the first appearance of active queen cells at the commencement of the clover flow. The same results were obtained, all colonies had active queen cells at the end of seven days, and capped cells in fourteen days. One colony swarmed within two weeks after treatment. One colony was treated a little more severely than the others in that all the brood was removed from the lower chamber and placed above. The queen was left below on two drawn combs and eight sheets of foundation. This colony did not make any preparations for swarming after treatment. The above experiments indicate that the above plan of swarm control is not drastic enough in a locality similar to Ottawa where the swarming season is long and intense.

Another plan, the exact opposite of the above plan, and one which has proved successful in British Columbia, that of raising the queen with one frame of young brood to an upper chamber with a super of empty combs between was also tried at the same time. Eight days later all queen cells except one were removed from the lower chamber. On July 15th the upper supers containing the old queens were removed and placed on new stands. A young queen not yet laying was found in each of the lower chambers. This method controlled swarming, and also gave an increase. The same experiment with five colonies was continued during the past season, two of the colonies were provided with an entrance just below the excluder beneath the super containing the old queen, and although swarming was controlled, no young queen was produced in the lower chamber. The other three colonies were given no upper entrance. One of these produced one queen below, one produced two queens, one on each side of a division board, while the other did not produce a queen. Swarming was controlled in all cases during the flow from clover, but this method does not control early swarming during the dandelion flow. One feature of this method is the re-queening of the colony during the later part of the season, but our experiments prove that this cannot be relied upon, as the bees in some cases refuse to produce a young queen below, or if they produce one, she is either lost or destroyed before she starts laying.

Another method that is being tried is one devised by Mr. Sladen, and although it is only in its experimental stage, good results have been obtained during its first year. The system is one in which the old queen is removed from the colony about the time the honey flow from clover commences, or as soon as preparations for swarming have started. Eight days later, all queen cells except two are destroyed, and the brood equally divided, and a division board is placed in the centre of the hive with a queen cell on each side. A special portico is placed at the entrance so as to give a separate entrance for each side. A queen excluder with a bar along the middle is placed over the brood chamber to prevent the young queens from crossing the division board. Supers are given in the same manner as with an ordinary colony. With the exception of giving supers, these colonies do not need any more attention till August, when they are examined to see if both queens have succeeded. If there is a queen on one side of the division board only, another queen may be introduced, or the division board may be removed when the colony reverts to a single. In the spring as soon as each side of the division board is filled with bees one-half is removed and placed in a new hive standing close to the original, each hive is then filled up with empty combs. This leaves either lot of bees too weak to swarm during the flow from dandelion and fruit bloom. All their energy is devoted to brood rearing, and both lots are able to build up well in time for the honey flow from clover when they again have their queens removed. You will note that if the two queens are a success, each colony will be divided every year. To prevent undue increase, however, one colony in each pair is treated by the above method, the other has the queen removed and is then placed over the first. This brings together the two forces of the bees and makes an immensely strong colony for the clover flow. By this system, swarming has been effectively controlled during the entire season. The number of manipulations required for each colony during the season are comparatively few. With regard to the honey crop from these colonies the results are as follows. The average from two ten-frame colonies that were divided was 215 pounds, while the average from the colonies from which the queen cells were removed every week was 176¼ pounds, giving a gain of 38¾ pounds per colony besides the 100 per cent. increase. Another feature of this system is that when the queens are removed at the time of treatment, they can be placed with one or two frames of brood into a ten-frame hive, one on each side of a division board and they will build up strong enough to winter as a double colony if so desired, or the queens can be used to replace any that may be lost from the colonies treated by the system. As I have said before, this system is still in the experimental stages, therefore it would not be advisable for beekeepers to adopt this system absolutely until further work has been done, as further improvements are expected as the system advances.

Experiments With Winter Stores.

During the winter of 1917-18, a few experiments were started to find out the comparative value of alsike clover honey, a mixture of alsike and sweet clover honey and natural stores supplemented with sugar syrup as winter stores for the bees. A number of combs of honey gathered at different times of the season were kept for this purpose. During the first week in October, four colonies, (Group one), had all their combs removed from the brood chamber and each were given nine combs filled with white clover honey gathered during the last week of June and the first five days of July. Five colonies (Group two) were shaken from their combs, and each were given nine combs filled with a mixture of white clover and sweet clover honey gathered during the later part of July. Ten colonies (Group 3) were fed from twenty-five to thirty pounds of sugar syrup, two parts sugar to one part of water. The combs were not removed from these colonies, so that they had a few pounds of natural stores left. All colonies were in ten frame Langstroth hives and as near to equal strength as possible. They were all fed at the same time and brought into the cellar November 16th. The temperature of the cellar was kept as near 45°F. as possible during the entire winter, and no disturbance was noticed in any of the colonies.

All colonies were removed from the cellar on April 15th and weighed, but were not examined till the 25th. Plenty of stores were found in the hives at this time, but it was found that the clover honey had granulated slightly and the mixture of clover and sweet clover honey had granulated still more. No granulation had occurred in the sugar syrup, but a little granulation was found at the upper corners of the combs where the natural stores were placed. The average loss of Group one, in the cellar was twenty pounds twelve ounces, or twenty-three pounds twelve ounces from the time they were fed. The average loss of Group two in the cellar was thirteen pounds seven ounces, or sixteen pounds from the time they were fed. For Group three, the average loss was thirteen pounds fourteen ounces in the cellar or seventeen pounds, since the time they were fed. The strongest colonies in the spring were those wintered on the clover honey, and the weakest were those wintered on the sugar syrup. All colonies, however, were strong for the clover flow. This same experiment was carried on during the winter of 1918-19, but with a less number of colonies, and without tiring you with the dates and figures, I may say that although clover is a safe food for the bees during the winter months, the results obtained from our experiments show that a small amount of natural stores supplemented with sugar syrup is the cheapest, easiest, and safest food to give.

Other feeding experiments were as follows:—

One colony had all combs removed and was given combs filled with dandelion honey gathered during the latter part of May and first week in June. This colony developed dysentery early in the spring, and was very weak when brought out in April. The stores at this time were granulated hard and uncapped. The loss of weight in the colony between November 13th and April 15th, was 34½ pounds.

Another colony was fed on a mixture of equal parts of clover honey and sugar syrup. The honey was boiled for five minutes. The colony was placed in the cellar November 13th and died of starvation March 27th. The loss of weight between these two dates was thirty-three pounds. There was no dysentery at any time.

Three other colonies fed on the same mixture, but with the honey heated to only 160°F. came through safely, but the consumption of stores was heavy, the average loss being 28¼ pounds from November 13th to April 15th. Two other colonies fed on the same mixture, but with unheated honey also came through safely with a slightly smaller loss of 23¾ pounds.

Another colony with a small amount of natural stores supplemented with thirty-four pounds Diamond Cane Sugar Syrup, developed dysentery fourteen days after being placed in the cellar. This colony was dead by January 1st.

The results of these experiments go to show that honey gathered from dandelion is unsatisfactory as food for the bees during the winter, and that cane syrup as sold on the market gives disastrous results when used for winter stores. It would also appear that the higher honey is heated the greater rate of consumption, and that when it is heated high enough to kill the spores of American foul brood, it is unsafe. All this again bears out a former statement that sugar syrup made from the best granulated white sugar is the safest food for bees during the winter.

Experiments to find out if thick packing has any advantages over thin packing.

For this purpose, eight colonies of equal strength, and fed with an equal quantity and quality of stores were chosen. These colonies were placed in quadruple cases October 12th and packed with planer shavings. One set of four was given six inches of packing on the bottom and four sides, and about ten inches on top. The other set was given only two and a half inches on bottom and sides, and about eight inches on top. Sealed covers were used in every case. The entrances to the cases were reduced to one and a half inches by three-eighths of an inch wide. In each set two colonies were facing northwest, the other two were facing southeast. All were surrounded by a board fence six feet high. In the spring, the number of dead bees varied slightly at each entrance, but the number for each case was about equal. The colonies were not removed from the cases till May 26th, when they were weighed and examined. In the case with the thin packing, the average number of combs covered with bees was 6¾ and the average loss was twenty-four pounds. In the cases with the thicker packing, the average number of combs covered with bees was 6½, while the loss was 23½ pounds. These results seem to indicate that there is no advantage in using the thicker packing. This experiment is being continued this year.

Experiment with larger hives.

Owing to the many discussions among beekeepers on the merits of the different sized hives now in use, and especially as many are favoring a larger hive, we decided to start an experiment with Jumbo hives carrying ten frames and Langstroth hives carrying thirteen frames. The bees were not transferred to the Jumbo hives till too late in the season to obtain any results this year.

We are also carrying on in a small way some breeding experiments, but these are only in the early stages of development. A small shipment of Aluminum Combs has been received at Ottawa and it is intended next year to give these a trial and investigate the claims made for these combs.

Next season, these experiments will be continued, and we hope to obtain from them some reliable data which may be of help to the beekeeper.

As I have said before, there is a great field for experimental work among the problems confronting the beekeeper, especially along the lines of swarm control and wintering. There is also another line of investigation that I would like to see taken up and some work done on, but one which we have not yet been in a position to undertake, that is the adult disease of bees. From reports received, this is getting to be a serious thing among beekeepers, and a great number of colonies are lost yearly from this disease, and I think it is time some investigation is made into its causes and control. There are several other lines of investigation that offer enticing fields of work to the experimenter, but I have not the time to enumerate these to-day.

MR. HOLTERMANN: What temperature was your cellar?

MR. GOODERHAM: We kept it running between forty-two and forty-three degrees Fahrenheit. In keeping our heat at fifty degrees we found the bees were a little more uneasy at that heat than if we kept it at a lower temperature.

MR. HOLTERMANN: How did you keep it at that temperature?

MR. GOODERHAM: We had no artificial heating. If the temperature dropped below forty-eight degrees we just closed things up.

MR. HOLTERMANN: Then you get temperature at the expense of ventilation.

MR. HOLMES: Do you consider fifty degrees too high?

MR. GOODERHAM: No, I do not consider that temperature too high, but from our experiments it shows that your honey consumption will be a little higher.

MR. HOLTERMANN: We must remember that these experiments are carried on under a good deal of difficulty and the reason why is because they have not the funds which are necessary in order to get a proper equipment. My criticism in regard to the danger of sacrificing ventilation to obtain a proper temperature was made with this knowledge in mind.

MR. GOODERHAM: There was no time during the winter when the air was at all stagnant. We took tests and the air was quite pure. I would like to hear what Miss Fowls has to say on this particular point.

MISS FOWLS: I do not feel that I can add much on this subject for the reason that at home we winter entirely out of doors. We wintered only once in the cellar, and had disastrous results because conditions were not right. At Medina I had something to do last winter with that cellar, but it was made too late to speak of the results obtained. As for the ventilation we have a shaft at one end of the cellar, and at the opposite end we have a fan in the door so that the air can be taken directly from the store-house, so that it is not outside air, but it is rather cold. The ventilation is good all the time, but as I said it was started too late to speak of results.

MR. GOODERHAM: In my opinion bees do not need a great deal of ventilation when they are in the state they are in during the winter.

A MEMBER: I had an experience once where by an accident the entrance was closed up practically tight all through the winter, and they came out in the spring all right.

The election of officers and representatives then took place, and resulted as given on page 4.

REPORT OF COMMITTEE ON RESOLUTIONS.

Your Committee on resolutions beg leave to report as follows:

1. We have learned of the proposal to memorialize the Department of Agriculture and the Legislature of Ontario regarding the perfecting of plans for an adequate supply of Italian queens for the improvement of bees throughout the province and the fortifying of the same against European foul brood. We recommend that this movement be vigorously carried forward.

2. We have in mind the very successful meetings of this Association formerly held on dates in the early part of December, and we recommend the December

dates to the consideration of the executive in the arranging of future annual conventions of this Association.

3. We have learned of the death of Robert McKnight, of Owen Sound, and as this visitation removes one who took a deep interest in the activities of this Association, occupying as he did the office of President for a term, we would recommend that the Secretary of this Association draft a letter of sympathy addressed to the family of our late co-worker at Owen Sound.

4. Your committee having learned of the illness of Dr. C. C. Miller, owing probably in part to his advanced years, and knowing of the very keen interest manifested, and the important part taken in the development and advancement of the beekeeping industry by this good man during many long years, we recommend that the friendly greetings of this Association, and an expression of sympathy be drafted in a letter addressed to Dr. Miller at Marengo, Ill.

5. Your committee would recommend that beekeepers and prospective beekeepers be warned against the policy of establishing apiaries within a radius of three miles of existing apiaries, and that this warning be given all due prominence in the bulletins and campaign of education relative to bees and bee-culture.

6. We have noted with very great pleasure, the arrangement of the exhibit in the beekeepers' department at the Horticultural Exhibition. This exhibit certainly stands four-square, is faultless from every viewpoint, and a very great study and skill has been exemplified in the staging throughout, we would therefore recommend that an expression of appreciation be tendered Messrs. H. G. Sibbald, P. Temple, W. Couse and F. W. Krouse for their untiring efforts in this behalf, all of which is respectfully submitted.

M. B. Holmes,
John Newton,
H. E. Eyre.

Moved by E. T. Bainard, seconded by H. G. Sibbald, that the report of the Resolutions Committee be adopted. Carried.

The Secretary: Before the vote is put on that report would it not be a good thing to make an amendment thereto that it will be necessary to make certain changes in the foul brood law if the work is to be carried out, provided we get the appropriation.

Mr. Holtermann: As far as this whole movement is concerned I am totally in sympathy with it, and I would have pleasure in moving that that amendment be added.

HONEY CROP REPORT.

The Crop Report Committee of the Ontario Beekeepers' Association met in Toronto on Thursday, July 31st, 1919. Reports were received from 579 members of the Association, as well as reports from Quebec and the United States. Reports from outside sources indicate the crop is below normal. With a few exceptions the crop of light honey in Ontario this year is generally lighter than last year, and so far as can be ascertained there is not a large amount of last year's crop held over.

The sugar market shows that while sugar may not increase much in price, there is a big shortage which cannot be relieved for some time.

In view of these conditions the Committee recommends the same prices as last year, and should there be any conditions arise which will materially alter the market members will receive due notice.

Cultivate your home market to its fullest capacity. Following are the prices recommended by the committee:

Best quality light extracted, wholesale	**24c. - 27c. per lb.**
Best quality light extracted, retail	**5c.-8c. higher**
No. 1 Comb, wholesale	**$3.00 to $3.75 per dozen**
No. 2 Comb, wholesale	**2.00 to 3.00 per dozen**

Members are cautioned not to sell second grade honey for table use, but to sell this to biscuit manufacturers. Prices recommended are f.o.b. in 60 lb., 10 lb. and 5 lb. tins, the former being net weight, the latter being gross weight. The lower prices should be quoted to wholesale and commission men, and the higher wholesale price to retailers. The size of the order and style of package should be taken into account in determining the retail price.

Signed by the Committee.

Wm. Couse,
H. G. Sibbald,
W. J. Craig,

Jas. Armstrong,
President.
F. Eric Millen,
Secretary-Treasurer.

ONTARIO BEEKEEPERS' ASSOCIATION.

Guelph, Canada, August, 1919.

Dear Fellow Member:—

Some members have written to this office stating that they have forwarded money to queen-breeders and package bee dealers but have received no queens or bees in return. We shall be glad to do all we can to see the members receive satisfaction if they will send us particulars and copy of the correspondence.

Members should be warned against sending money or honey to unknown parties until they have assured themselves that the dealer is responsible. Your banker will be glad to get this information for you.

Members are strongly advised to beware of parties offering a low price for honey because of a large crop or loaded market. While all other food prices remain firm, there is no reason why honey, recognized as a valuable food, should not sell for a fair price.

Members are also warned that no firm has received the sanction of the Ontario Beekeepers' Association to use its name in any way in dealing with the members of the association.

There is a big shortage of sugar this year and all members are urged to secure, at once, enough to winter the colonies in the best possible condition. Sugar may be hard to get later so secure your supply now. If sugar cannot be obtained honey should be saved.

Yours very truly,

F. Eric Millen,
Secretary-Treasurer.

P.S.—Tack this up in the honey house for future reference.

FINAL WHITE HONEY CROP REPORT, 1919.

ONTARIO BEEKEEPERS ASSOCIATION.

GUELPH, August 5th, 1919.

County	Number of Beekeepers Reporting	Number of Colonies Reported —Spring Count	Number of Pounds White Honey*	Average Number of Pounds per Colony—Spring Count
Algoma	5	43	2368	95
Brant	15	755	33680	45
Bruce	22	1443	32050	22
Carleton	16	534	40950	76
Dufferin	3	259	5350	21
Dundas	6	244	9800	40
Durham	6	61	4625	76
Elgin	12	699	5175	7
Essex	5	163	6085	37
Frontenac	7	574	29900	52
Glengarry	5	782	57300	73
Grenville	3	113	8940	78
Grey	25	1194	40925	34
Haldimand	15	1104	46250	41
Halton	9	990	31700	32
Hastings	22	1195	76470	64
Huron	17	1227	33475	27
Kent	14	960	10720	11
Lambton	22	1109	16260	14
Lanark	5	61	3600	59
Leeds	12	544	28162	51
Lennox	10	412	42922	104
Lincoln	15	924	22475	24
Manitoulin	2	17	330	19
Middlesex	24	1982	25390	13
Muskoka	3	19	1020	54
Nipissing	4	36	1160	32
Norfolk	7	216	5085	23
Northumberland	14	1026	54600	53
Ontario	18	843	41420	49
Oxford	16	617	19640	31
Parry Sound	4	204	9300	46
Peel	17	1185	69450	58
Perth	22	1158	61775	53
Peterboro	4	84	3700	44
Prescott	8	961	90075	94
Prince Edward	9	680	37370	55
Rainy River	No Report			
Renfrew	5	375	35700	95
Russell	9	680	53900	79
Simcoe	29	1435	60770	43
Stormont	6	260	20360	78
Thunder Bay	No Report			
Victoria	16	824	30685	37
Waterloo	16	566	23490	41
Welland	12	416	21300	51
Wellington	20	1450	68283	47
Wentworth	9	509	21375	42
York	34	1043	55160	53
Totals	579	31976	1405170	44

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* A small percentage of the honey reported is sold in comb honey sections. As a colony managed for comb honey will produce about half as much as one managed for extracted honey, the Committee has multiplied the number of pounds of comb by two before adding in with the extracted.

REPORT OF THE PROVINCIAL APIARIST.

The resignation of Dr. Burton N. Gates on the 17th day of April last crippled seriously the planning of inspection work during the past season. Inspectors had to be selected and appointed; demonstrations had to be definitely arranged and advertising drawn up before the work commenced, and every beekeeper realizes that the cream of the inspection season is from May 15th to the 15th of July. The difficulty encountered in 1918 of securing efficient inspectors was much more intense in 1919 as it was almost impossible to persuade good beekeepers to give up the cream of their time for the allowance the Department was able to offer. We were fortunate, however, in securing some good assistance and we tried to make the work which was done thorough and lasting.

The following is the list of inspectors acting during 1919:

Armstrong, Jas., Selkirk.
Agar, Wm., Kleinburg.
Barber, R. E., Guelph.
Austin, F. L., Fonthill.
Haines, Horace, Allanburg.
Burke, E. M., Dunnville.
Christian, J. E., Alliston.
Brown, Allan, Peterboro.
Inch, Hector, Port Hope.
Gowan, L. B., Hagersville.
Harris, H. C., Alliston.
Scott, Warrington, Wooler.
Weir, W. A., Toronto.

In addition to which special inspectors and demonstrators were appointed as follows:

Hutchinson, A. E., Mt. Forest.
Selwyn, H. H., Ottawa.
Robertson, N., Northwood.

Believing that the available funds did not justify our trying to inspect the whole of Ontario in one season, the policy of 1918 was continued, and the Counties of Durham, Victoria, Ontario, York, Peel, Simcoe, Welland, Lincoln and portions of Peterboro, Grey, Haldimand and Wentworth, were selected for intensive inspection. In order that the balance of the Province should not be without assistance, a series of thirty field meets were arranged at convenient apiaries and thoroughly qualified demonstrators were sent out by the Department to assist in the programme, prepared for such field meets, by the Local Secretary of the County Association.

A glance at the map will show you that the work of inspection took place in the middle counties and in the Welland peninsula. A few cases of special requests where the need was demonstrated to be urgent, such as reported moving of diseased bees or intention to do so, were also attended to. Our records show that the districts selected for attention were the most seriously infected sections of Ontario and we were desirous, if at all possible, of preventing the spread of American foul brood into the Eastern Counties. Subjoined is a detailed table of the work of inspection accomplished. In all 727 apiaries were visited and 297 found diseased, or 40.8 per cent. of the total apiaries visited were diseased! 6115 colonies were examined and 1327 were reported diseased. Of these 1327 diseased colonies, 761 were diseased with American foul brood, or 12.4 per cent. of the total number of diseased colonies. Thirty-nine colonies were reported destroyed and agreements were secured for the treatment of all colonies diseased with American foul brood. Inspectors were instructed to revisit all apiaries diseased with the American type and assure themselves that treatment had been administered as the agreement called for. It was found impossible to cover even all sections of the counties selected for work owing to the discovery of numerous beekeepers within these counties who were not on the Departmental lists. Inspectors were then instructed to visit every apiary within one township before proceeding into another township.

The work accomplished has been only partially satisfactory, however. The re-visits of the inspectors have clearly convinced us that the great majority of beekeepers are either too careless or incapable of administering the treatment satisfactorily, that is, to ensure a clean territory the following year. Another fact which makes it seem a waste of good money to inspect and clean up thoroughly is that there is nothing to prevent the importing of diseased bees into a territory which has been cleaned up.

WM. A. WEIR,
Acting Provincial Apiarist.

WORK OF INSPECTORS

County	Township	Ap. V'sd.	Ap. Dis'd.	Col. Ins.	Colonies Diseased AFB.	EFB.	Dest.	Treated
Ontario	Whitby	52	15	294	38	11	1	....
"	Scugog Is.	7	5	57	9	0	1	....
"	Thorah	6	4	79	19	9	0	....
"	Pickering	58	18	508	104	5	2	....
"	Reach	24	12	197	66	37	5	....
"	Uxbridge	4	0	15	0	0	0	....
Victoria	Mariposa	10	8	236	15	some	0	15
Peterboro	Monaghan N.	2	1	28	0	20	0	....
"	Otonabee	5	2	34	0	5	0	....
"	Douro	7	1	40	0	5	0	....
"	Smith	5	1	17	1	0	0	....
Durham	Cavan	9	7	52	0	40	0	....
"	Manvers	23	10	112	0	54	0	....
"	Clarke	45	28	124	0	124	0	....
"	Darlington	60	5	207	0	13	0	....
"	Cartwright	17	2	59	0	7	1	....
"	Hope	22	3	77	0	4	0	....
York	Vaughan	22	7	210	39	0	0	....
"	King	34	4	252	13	8	6	....
"	E. Guillimbury	20	9	196	30	9	9	....
"	Markham	58	30	822	113	some	0	....
"	Whitchurch	27	18	199	11	97	0	....
"	Georgina	3	3	80	12	0	2	....
"	N. Guillimbury	15	9	56	24	3	4	....
Simcoe	Tecumseh	20	10	206	47	1	1	....
"	W. Guillimbury	23	12	454	73	14	6	....
"	Essa	1	0	7	0	0	0	....
"	Innisfil	7	0	66	0	0	0	....
Peel	Albion	12	6	126	25	0	0	....
Grey	St. Vincent	7	4	123	26	0	0	....
"	Collingwood	18	10	272	30	0	0	....
"	Euphrasia	14	7	295	29	0	1	....
Welland	Bertie	45	23	259	6	69	0	....
"	Pelham	8	5	16	0	15	0	....
Haldimand	Canboro	2	1	8	0	1	0	....
"	Moulton	4	3	31	0	9	0	....
"	Seneca	5	3	37	0	some	0	....
"	Oneida	1	1	12	0	3	0	....
"	Cayuga N.	3	1	15	0	3	0	....
"	Cayuga S.	5	0	22	0	0	0	....
"	Rainham	5	2	70	6	0	0	....
"	Walpole	12	7	145	25	some	0	....
		727	297	6,115	761	566	39	15

DEMONSTRATIONS IN APICULTURE, SEASON 1919.

Date.	Place.	Owner.	Demonstrator.
June 3rd	Rt. No. 6, Barrie	Edgar Thomas	W. A. Weir.
" 3rd	Rt. No. 3, Port Hope	Hector Inch	Wm. Agar.
" 3rd	Woodstock	Jas. Armstrong	Jas. Armstrong.
" 4th	Garrison Rd., Ridgeway	J. F. Dunn	Jas. Armstrong.
" 6th	Clinton	Irving Bros.	A. E. Hutchinson.
" 6th	Simcoe	Chris. Quanbury	Jas. Armstrong.
" 7th	Cumberland	Alex. McLaughlin	H. H. Selwyn.
" 7th	Elgin Mills	J. D. McGillivray	W. A. Weir.
" 7th	Rt. No. 9, Peterboro	Allan T. Brown	Wm. Agar.
" 10th	Oakwood	Jno. Davidson	Wm. Agar.
" 10th	Rt. No. 1, Arden	S. Peterson	H. H. Selwyn.
" 10th	Port Elgin	J. W. Reany	A. E. Hutchinson.
" 11th	Sarnia	Rumford & Fretz	Neil Robertson.
" 11th	Lambeth	D. Anguish	Jas. Armstrong.
" 12th	Beaverton	Angus Grant	Wm. Agar.
" 12th	Rt. No. 2, Dundas	Jas. E. Caldwell	Jas. Armstrong.
" 13th	Rt. No. 3, Walkerton	Jas. Moore	A. E. Hutchinson.
" 13th	Petrolia	Jno. T. Wilson	Neil Robertson.
" 14th	Oakville	W. Johnstone	W. A. Weir.
" 14th	North Claremont	Andrew Johnson	Wm. Agar.
" 14th	Rt. No. 2, Milford	Spencer Pierson	H .H. Selwyn.
" 14th	Vinemount	Jas. M. Patterson	Jas. Armstrong.
" 14th	Rt. No. 8, Picton	C. A. Vincent	H. H. Selwyn.
" 17th	Napanee	Henry Rooks	H. H. Selwyn.
" 18th	Rt. No. 5, Stratford	Andrew Schmidt	Jas. Armstrong.
" 18th	Iroquois	W. J. Forward	H. H. Selwyn.
" 19th	Cornwall	G. H. Bronson	H. H. Selwyn.
" 20th	Ottawa	Central Exp'l. Farm	H. H. Selwyn.
" 20th	St. Jacobs	E. M. Martin	Jas. Armstrong.
" 20th	Shelburne	J. J. Hall	A. E. Hutchinson.
" 24th	Monklands Sta.	W. L. Montgomery	H. H. Selwyn.
" 24th	Harrow	Jno. W. Noble	Neil Robertson.
" 26th	Rodney	Simon Sperin	Jas. Armstrong.
" 28th	McAlpin P. O.	Ed. Clare	H. H. Selwyn.
" 28th	Strange	R. Rutherford	Harris.
" 28th	Powassan	Mrs. W. A. Purdon	W. A. Weir.
July 1st	Athens	M. B. Holmes	Selwyn.
" 3rd	Kemptville	Kemptville Agr. School	H. H. Selwyn.
June 12th	Mountain View	G. H. Stafford	H. H. Selwyn.

Moved by M. B. Holmes, seconded by R. E. L. Harkness that the Report of the Provincial Apiarist be considered, read and adopted, the report to be laid on the table. Carried.

Moved by Wm. A. Weir, seconded by J. D. Evans, that the Press Committee, Messrs. H. G. Sibbald and J. L. Byer, receive the thanks of the Association for their untiring efforts during the past year. Carried.

Moved by W. W. Webster, Little Britain, seconded by H. G. Sibbald, Toronto, and resolved that owing to the modern rapid facilities for transportation from all parts of the world and through these facilities the importation of products which contained infection, the bee diseases of Canada and the Province of Ontario have increased from one to at least four. That these diseases are of such a nature that when present in the hive they arrest the production of honey and in most cases culminate in the destruction of the colony.

And furthermore through the effect of this condition, the value of bees is much curtailed in their usefulness in the pollenization of alsike clover, second growth red clover, alfalfa, buckwheat, apple, plum, pear, peach and other blossoms, and curtail the use of honey, consisting largely of inverted sugar which is, therefore, the most healthy form of sugar. Therefore, owing to the proven inadequacy of every previous effort to stamp out the diseases common to the hive owing to insufficient funds, we respectfully, yet in the spirit of justice and true economy ask that $30,000 annually be set aside for the purpose of stamping out foul brood in Ontario.

In conclusion we would draw the attention of those in authority, to the fact that in the stamping out of Hog Cholera, the Dominion Government does not hesitate to expend every dollar that is required to do the work and barring precedent, which is not necessarily justice, diseases among bees are exactly on the same footing.

Finally we would respectfully point out that whatever is done, should be done promptly, because a vigorous campaign should be entered into as soon as the first days of next spring arrive, and that the President appoint a committee to interview the Provincial Government to grant the above. Carried.

INTRODUCTION OF THE NEW PRESIDENT.

The retiring President then introduced the new President, Mr. W. W. Webster to the convention:

Mr. Webster: In electing me to the Presidency of your Association, for which I thank you, I observe that you are following the example of the people recently shown in electing and choosing a farmer as their leader in the Cabinet. It looks to me that almost every position of any consequence will shortly be occupied by a farmer. I am of the opinion that a farmer to be a farmer in the full sense of the word in all that the name implies should have a few colonies of bees. In accepting this position I feel keenly sensible of the honor that you have conferred upon me. I feel scarcely worthy of the position that has been filled so ably by our past president for the last two years, and I possess a feeling of fear lest I should not measure up as I should, but I can only promise you that I will do my best and with your sympathy and with your assistance and co-operation I trust that the coming year may be the best in the history of our Association.

SELECTION OF A LOCATION.

J. L. Byer, Markham.

This subject of the selection of a location for beekeeping seems a commonplace enough sort of thing, at least that is what I thought a few minutes before I got up here, but at the present time it seems to be a very serious question. In looking over correspondence I have received during this past year I do not know how many letters I have had from prospective beekeepers, asking advice along this line. I sometimes wish I was infallible, so that I could give good advice to everyone, and advice that would be worth while; but not being that way I must go slow in answering a positive yes or no, for fear that I would give advice that would be the means of hindering some one that is going into beekeeping as a business.

As you all know there are a great many beginners in the beekeeping game particularly among our returned men. I have been accused, once or twice, of writing along somewhat selfish lines, but what I say is that it is very unwise for beekeepers to go out and try and induce a great number to come into the business, but during the past twelve or fifteen years I have answered hundreds and hundreds of letters giving advice to others, and sometimes I have had the pleasure of seeing those who have taken the advice become successful beekeepers. I have done considerable writing for the public press on this subject, and naturally come in for some publicity; but I want to say this morning that in all the hundreds of letters I have received from would-be beekeepers I have never once in answer thrown cold water upon their ambitions. I only wish that I had the faculty of giving advice to all the enquiries which would meet all the difficulties.

Now, regarding the selection of a location for beekeeping, frankly, I do not know what to tell you. Distant fields always look green. When we heard Mr. Agar tell us about New Ontario, we all felt we would just like to have a hundred colonies up there. There is a large element of gambling in beekeeping. Perhaps everyone won't agree with that, but I think so. You never know just what is going to happen. Once or twice in my experience one good rain has been the means of putting the balance on the right side of the ledger. I imagine as Mr. Agar talked about New Ontario, a few of us felt if we were younger and had two or three thousand to invest we would just like to go up there and have a fling at it; but you know something might happen there that it would not be successful. The point I am trying to make is that perhaps we would just be as well off in the locality in which we are living. So that I am not going to specify any part of Ontario—which is the only part of Canada I am really familiar with—to prospective beekeepers. At the present time we have bees scattered throughout Ontario. We have two yards up in the northeast corner of Simcoe County and nearby there are immense clover fields. That was our main objective in going there.

As to our yards here in York County, where we have not so much clover but have buckwheat, we find in comparing the results during the past seven or eight years we have had bees in Simcoe County that the balance has always been in favor of the York County apiaries. Take this last year, and in spite of foul brood, the York County yards yielded enough buckwheat to pay our feed bills for all the yards, which amounted to considerable. We do not get any buckwheat up in Simcoe, but we get considerable here in York County. If I were starting out to-day to look for a location I would try and get one where there is abundance of buckwheat and clover. I think it is the best combination you can get. Of course, New Ontario is something of an experiment yet; but twelve years ago if I had not been tied up with a family, I believe I would have gone up in that north country. There is something that appeals to a man with red blood in his veins to get back into the wilderness and try to overcome difficulties. I was married, and circumstances were such that I could not go. Lack of money was the chief obstacle. Perhaps I am just as well off that I did not.

Now, coming right down to the point of deciding on what part of the country you are going to place your bees, my advice is do not go within two or three miles of a well established apiary. I had a question sent me by the Secretary of the New Zealand Beekeepers' Association, which was, "Do you consider you have a moral right to place your bees within three miles of another well established apiary?" and my answer was that I do not. In the first place it would be a poor business policy, and I feel I would lose out, and another reason is because I feel I would lose my self respect. I want in beekeeping or anything else to be able to look my neighbor in the face and not be ashamed. So, therefore, do not go and do that, if for no other reason than to save your pocket book. It is fallacy to go and place your bees close alongside another beekeeper. There are lots of localities in Ontario where there are no bees at all.

Then, of course, in your selection there enters in the question of your spring feed and numerous other problems which will occur to you in regard to location. I personally put much stress on the value of lots of early spring feed being near at hand for your bees. That was proven to me when I did not want to admit it. At one York County yard we have very little clover, but it is located in a place used years ago for basket making, and there are a lot of willows there which make a natural wind break. They have only to go eighty yards or so for this, while for clover it is necessary to go quite a distance. In Simcoe County the nearest spring feed is at least a mile in a direct line from the yard and this has been the means of our losing a great number of bees, for in the spring the weather is so uncertain. The sun comes out for a little while and the bees are tempted to go out; the clouds come and perhaps the sun does not come out again that day, consequently the bees are caught by the cold weather and perish by the hundreds. I have seen them on the road, hundreds of them. I believe in the value of having spring feed right near the bees. There is also a natural spring in this York County yard which makes it possible for the bees to have a good supply of water close at hand.

I do not know as there is much else for me to say on this subject. In conclusion I would like to impress once more upon you that personally I have no feeling whatever against anyone starting in the beekeeping business, but I tell you for your own good do not go and plant yourself down close to a well established beekeeper for it means that you are going to lose out.

Mr. Smith: I would like to know if there is a map of the location of the apiaries in the different districts so we may know where they are.

Mr. Byer: No such provision has been made so far. That is one advantage that I see in the British Columbia Act which requires every beekeeper to register.

Mr. Holtermann: It seems to me if a man is going to make a business of beekeeping he ought to know the territory he is going to get into.

Mr. Krouse: It seems to me that this question of registration is a very vital question. We are continually running up against it and it would appear that we have got to get that going. I fancy that this would do away with a lot of our difficulties in locating disease, and as this Association has already taken steps to eradicate foul brood this would perhaps be a good idea to follow up.

Mr. Holtermann: I would like to say so far as registration and putting apiaries where they shouldn't be, I do not think that there is very much relationship between the two, for I have seen case after case where men have deliberately put apiaries in a locality that they had no business to put them, knowing perfectly well what they were doing. Supposing you have a map and here in the centre you have your apiary what is to prevent a man coming and settling within a mile of you if he wishes to do so and the man that so encroaches on your territory is perhaps clear on one side of you—that is, no one is close to him on one side. The system I have adopted, and which I intend to adhere to, is that when a man comes and places an apiary close to one of mine I put another on the other side of him, and then he is as bad off as I am.

Mr. Clark: Can I be successful in operating an apiary on the outskirts of a town? I am a druggist in a town. I have had no trouble so far.

Mr. Hoshal: I may say that I have kept bees in the centre of a town since 1887, and I have yet to have my first trouble. I have had from one to four hundred colonies there. We drive right in with heated horses right close to the colonies and never have had trouble. I had some trouble with my neighbor, who was about an eighth of a mile away, on account of his being afraid of them. He went to the town council, but he did not get any satisfaction. I think that if your bees are a nuisance it is due to lack of knowledge of how to handle them. My opinion is you can train bees to be cross just as well as you can train them to be quiet.

Mr. Holmes: I may say, that we have kept bees in the little Town of Athens, and quite near the centre of it, for a good many years, and up to this date no serious complaint, no complaint in fact of our bees has been made. We, in common with other beekeepers, endeavor to handle our bees so that they will be good natured, and I would express the opinion that there could not be any objection raised and maintained in court against beekeeping in a town unless it can be shown to the court that the person is actually maintaining a nuisance; and judging from what I have seen throughout the province I believe it would be an extremely difficult thing to do. I have kept bees in a town for quite a few years and never had any complaint.

Mr. Armstrong: There is one danger in connection with keeping bees in a town, and that is if there is a canning factory situated there also the bees will travel there by the thousands.

Mr. Lowey: I have kept bees where neighbors are close and never had any difficulty. In fact they take as much interest in my bees as I do. If they see any swarming they will come running to tell me, and they will drive inside the yard and stand talking. I think it is something in the management of the bees and in the man. I have been in towns where bees were kept and where there were canning factories and never heard or saw any difficulty that Mr. Armstrong mentioned.

Mr. Hoshal: I might say that I have found difficulty in this way. Where a man is turning over fresh earth, or even hoeing for some unaccountable reason you will have difficulty there. If I rent ground off a man to keep bees I try to get as near the centre as possible.

Mr. Armstrong: I do not like to be caught napping and I think that perhaps Mr. Lowey will find that when he was in such towns where bees and canning factories both were situated the bees have probably been working on buckwheat or clover, and that was the reason he did not see them. But if you get an unusually dry season and there is a canning factory within their reach the bees will surely make for it.

Mr. Bainard: I live in the City of London, and I remember about two years ago there were some people went before the City Council there and tried to stop some people from keeping bees in the city and they refused to do anything in that way.

Mr. Holtermann: I kept bees in the City of Brantford for years, and I never had any trouble with my neighbors. But I will tell you what I do know, and that is that some of these people are not familiar with bees to the same extent that we are, and I know that while some of those people did not say anything, they did not enjoy their homes during the period they were there as much as though they had not been there, and I think that we should not inconvenience people. I do not think we should stop just where the law demands, but rather consider our neighbors more.

Now as to location. We have eleven apiaries, and in one place, and only one, were the bees giving trouble continually. A man rented a piece of his place to me. He grew alsike clover. The bees being on the place apparently helped him considerable, for when people would ask him how he got such large crops he would always say: " Oh, it is Holtermann's bees that do it," so he was in sympathy with bees. He had a hilly farm, and I never put in more anxious moments than when he used to be plowing those fields for the bees would suddenly come up over a hill perhaps in front of the horses and greatly scare them. Finally his son, who was not in favor of the bees, said: " If you don't get rid of those bees I will leave the place," so we finally hit upon putting them in the centre of a woods, and when they come out they have got to rise right up over those trees and it did away with the whole difficulty.

Mr. Beuglass: I keep forty colonies of bees right behind the house. I live in the city, right next to a bowling lawn. I keep them in the barn in the loft, and they do fine. One day a man came running up to me and said, " I see a lot of bees going into that barn. I bet you will get a lot of honey out of there." And I did take enough out to buy an automobile.

Mr. Brown: I have noticed with regard to keeping bees in the city that they have a tendency to light on a white washing on the line. I have known several washings that have been ruined that way, and had to be done over.

THE IMPORTANCE OF QUEENS AND SIMPLE METHODS OF REARING

P. A. Davis, Michigan, U. S.

Upon no one phase of beekeeping does so much depend as upon the queen. She is the keystone of commercial beekeeping and upon her merits hang the fate of the colony and the condition of the beekeepers' bankroll.

You may buy expensive equipment, use full sheets of wired foundation in all your frames, feed your colonies in times of shortage and pack or cellar your bees in the most approved manner, but if your queens are poor or inferior by inheritance, or are old worn-out queens, then do not be surprised if your box-hive neighbors get as large an average as you do.

To maintain an apiary or a string of apiaries in which the largest proportion of colonies are headed by common black or hybrid queens is merely to court disaster, and is almost as hazardous as for a fruit man to abandon spraying in a pest ridden district.

This day and age, when both American and European foul brood are so widespread, and the suddenness with which the latter can wipe out an entire apiary, makes it highly essential that every beekeeper should fortify himself by getting a disease resistant strain of queens at the head of every colony.

Owing to the uncertain character of the symptoms of European foul brood, I feel safe in saying that during the last decade there have been hundreds of thousands of dollars worth of bees, combs, honey and supplies burned to ashes by commercial beekeepers, when the whole thing could have been saved by killing the inferior queens at the head of diseased colonies and supplementing good queens—queens bred for stamina and power of resistance.

When one speaks of good queens and disease resistance queens he usually means pure Italians whose mothers have maintained healthy colonies after being subjected to exposure to European foul broody combs. I do not mean that all Italians are free from European foul brood. Far from it. Neither do I mean that all other races and hybrids will take the disease. About that we are not certain. But I do mean that here and there over the country *some* Italian queens have stood the fiery test, and distinct strains, called disease resistant strains, have been built up from these exceptional queens.

Even with these superior strains of bees occasionally a queen will be found whose larvae will contract European foul brood. Such a queen should be killed on sight and her drones trapped and killed.

There are two other types of queens which should not be allowed to go into winter quarters where the majority of the queens are pure. These types are the undersized queen and the mis-mated queen. The undersized queen indicates improper conditions during rearing and she is apt to develop weakness at an early age. The mis-mated queen may produce workers which are as good or even superior to workers of a purely mated queen, but she is apt to produce inferior workers while the second generation of such queens would certainly produce a heterogeneous mix-up which no practical beekeeper would desire.

Right here let me digress into what the future may hold for beekeepers.

It is a well-known law of heredity that oftentimes the cross of two separate races of the same species will produce an individual which is far superior to either parent. However, this is true only of the first cross, as the second cross, that is, the cross of hybrid on hybrid produces the most varied assortment imaginable. This law is made use of by some large pork producers in the corn belt in the following manner. The breeder maintains a herd of pure-bred Yorkshire sows for the mothers of their pork hogs. The Yorkshire being noted for their large litters and their long, strong bodies. They breed these sows to a pure bred Duroc Jersey boar which gives the resulting pigs thick meat and quick maturity. The result of such a cross is, happily, as fine a lot of growing and fattening pigs as one would wish to see, and in the fall when they are sent to market they inevitably range around the top. Further propagation of this first cross, however, means small litters of varied colored pigs which range from good ones to runts—mostly runts.

Thus one can see that some day a happy combination may be worked out in crossing pure races of bees which will be a paying proposition for the beekeeper even though he does have to buy all of his queens or else maintain two pure races and an isolated mating yard.

Therefore, in summing up the forepart of this discussion we find that in order to have the best queens we must have:

1st. Pure tested queens for breeders.
2nd. Our queens must be carefully raised.
3rd. They must be purely mated.

With regard to the methods for rearing queens let me say that queens are reared by bees under three impulses or conditions, and three only.

1st. When the colony becomes very populous honey is coming in and the brood nest is becoming crowded; called swarm cells.

2nd. When the mother queen is failing or about to fail and honey is coming in; called supersedure cells.

3rd. When a colony suddenly becomes queenless, regardless of the honey flow, and has eggs or young larvae in its combs.

You will note that the first two impulses occur only during a heavy flow while the third impulse is an unnatural impulse and may occur at any time.

We find by experiments that when the queenless impulse is forced upon a populous colony during a honey flow or its equivalent in the form of feeding, that we have queen cells built which are in every way equal to those built under the first two conditions.

After bees once get the impulse for queen rearing, they make special cells for the queen to deposit an egg or they remodel and enlarge a cell already containing an egg or young larvae. In the case of a larvae the nurse bees soon deposit a super-abundance of rich predigested food called royal jelly around and below the tiny embryo queen. This larvae eats heavily and grows large and fat quickly. At five days of age it is sealed up and pupates. On the 16th day from the day the egg was laid, the full grown queen emerges from the cell.

In commercial queen-rearing one or other of these impulses is supplied and queens are reared in large numbers.

There are numerous simple and complicated methods for rearing queens, but all of these simmer down to three basic methods whose principles run through them all. These methods are, the Miller method, Alley method and the Doolittle method. The Miller method is one of the simplest and is as follows:

THE MILLER METHOD: "Dr. C. C. Miller, who is the originator of the following plan, keeps his queen breeding queen in a two-frame nucleus, so that she does not have to work so hard and lives longer. To obtain larvae of the right age for queen rearing, a frame with two strips of foundation each about 4 in. by 2 in. are attached to the top bar about 4 in. from each end, with the longer dimension of the foundation vertical to the top bar. This prepared frame is placed between the two combs in the nucleus. The bees immediately start to build comb in the frame, using the two strips of foundation as their starting points, and as the nucleus does not contain many bees the comb built will consist of worker cells. The queen will deposit eggs in the cells from day to day as the cells are constructed. The frame is left in the nucleus for seven days, then the bees are shaken off the comb, and it will be found to contain eggs in the cells on the outer edge followed by just hatched larvae. The cells containing the eggs are cut away leaving the youngest larvae on the edge of the comb. The frame is then inserted in the centre of the brood nest of a strong colony, which was made queenless twenty-four hours previously, and is allowed to remain there for ten days. By that time the queen cells will be ripe and must be taken care of by the beekeeper, or the first young queen that emerges will destroy all the other cells."

THE ALLEY METHOD: "This method is a simple one, and can be recommended for the beekeeper who wishes to raise a few queens. An old comb is placed in the breeding colony and removed when nicely filled with eggs. A strip one cell wide is then cut out clear across the comb, with a hot thin bladed knife, being careful not to damage any of the cells in the row. The cells on one side of the strip are cut down leaving about one-third of the cell wall, and on the other side of the strip every two cells are broken down with a match, leaving one undamaged cell between each two broken down. This is done to prevent the bees from building the queen cells too close together. An old comb is then taken and about two-thirds of it is cut away and the prepared strip of comb is attached to the lower edge, with the undamaged cells pointing downwards. The comb is then given to a queenless colony. In ten days the cells will be ripe, each cell is then carefully cut from the strip and introduced to a nucleus or placed in a nursery cage as desired."

THE DOOLITTLE METHOD: "G. M. Doolittle was the first man to perceive the idea of making artificial queen cell cups. The cups are made by dipping a stick, which is the same size and shape at one end as the inside of a natural queen cell cup, into beeswax which is just about melting point. The stick is first dipped into water and then dipped five or six times in the wax, the first time about one-half inch deep and each successive dipping a little less deep than the previous one, so that we have a cell formed with a very fine edge and a thick base. Sixteen of the cells are attached to a bar with a drop of melted wax. A bottom bar of a frame with a piece cut off so that it will fit between the end bars of a frame works very nicely. A small drop of thin queen food (royal jelly) is then placed in the bottom of each cell on the bar. To obtain royal jelly, queen cells may be taken from colonies preparing to swarm or a colony may be made queenless three days previous to wanting the royal jelly, it will then have queen cells with food ready to utilize. The next operation is to obtain a comb containing twelve to twenty-four hour old larvae from the queen breeding colony. The bees are brushed from the comb, it is then immediately covered with a warm blanket and carried to a warm well-lighted room, if the temperature is below 90 degrees F. outside. The twelve-twenty-four hour old larvae are removed from the cells by means of a feather which has been trimmed to a fine point, which is slightly curved. Care must be taken not to injure the larva. The feather is passed down touching the side of the cell to the bottom and moved until the point comes directly under the larva. The larva is then carefully raised out of the cell and placed on the surface of the royal jelly in one of the prepared cell cups. When all cell cups have received a larva, the bar is fitted into a frame, which has had a strip of comb about two inches wide cut out of it through the centre. The bar is placed against the lower edge of the upper piece of comb and held there by a small block on the inside of each end bar, another end bar should be cut to fit over the lower edge of the comb to prevent the bees from building comb upwards and covering the queen cells. The frame is then placed in a strong colony which is made queenless the day before. After this is done a colony with plenty of uncapped brood is selected. The queen in this colony is found and placed on one comb, the remainder of the brood is placed in a hive body. The comb with queen on is then placed in the centre of the original brood chamber and the space on both sides filled with empty combs. A queen excluder is now placed over the brood chamber and the hive body with brood placed on top. The following day the frame with queen cells is removed from the queenless colony and placed in the centre of the brood in the upper hive body. The queenless colony can then be given another bar of queen cells after its combs have been looked over and all queen cells, started on them, destroyed. The queenless colony can be used in this way for at least two weeks if so desired, it should then be allowed to develop a queen, or it may develop fertile workers. The queen cells in the supered colony will be ripe in nine days."

When queen cells have become ripe and are removed to nursery or nuclei, great care must be exercised as an unhatched virgin may be easily killed or injured by jarring, chilling, or allowing the cell to be turned on its side.

In regard to mating nuclei, I believe the most practical nucleus box for the honey producer is one holding at least two Langstroth frames. One of the most satisfactory ways to dispose of a number of eight frame hives taking the regular frame is to place a thin partition in the centre and making two mating boxes out of it. One or two frames of hatching brood are placed in each nucleus box and a virgin is smoked in on the following day or a cell is introduced in a West cell protector at once.

Two weeks or earlier after hatching, the queen should be laying, and she may then be removed and another virgin run in or cell given as before. A nucleus should be fed until the virgin begins laying, if no honey is coming in.

In summing up, we find that: 1st—Bees will rear queens under three impulses. 2nd—In all stages from the egg to the laying queen the colony or nucleus which is rearing or caring for that queen must have a steady honey flow or its equivalent in stimulative feed. 3rd—Great care is always necessary in transferring larvae and handling cells, in order to obtain the best queens possible from your breeding stock.

Mr. Krouse: I would like to ask if when removing the queen there is any danger of swarming. We find that when you make a colony queenless they make preparations to make cells again?

Mr. Davis: There are no infallible rules in beekeeping, but I have never had any trouble along that line. Of course, with the absence of the queen for twenty-four hours they will get the cell building impulse, but they will not get far enough ahead to do any damage.

BEEKEEPING IN THE WEST.

Wm. Couse, Guelph.

I think that a beginner in beekeeping should begin prepared to lose, for he will lose. I have said time and time again that there are very few who are what you call experts that have not had twenty years experience. It takes a long while to become an expert. I think a beginner should start out with just a few colonies and possibly work at something else while he is gaining experience. There are many who start in with $2,000 or $3,000 and no experience. Well, just as surely as they follow that method of investing that much with no experience then just as surely at the end of a year or two they will have no $2,000 or $3,000, but they might have some experience. If I were a beginner again I would go slow; I would work at something else. You have got to go through this system of getting it into your system, because these older men do not know why they do these things; it is kind of in their system. They do it naturally, but that only comes with long experience.

There are a great many places you can begin beekeeping. Almost all over this province is fairly good beekeeping locality, but you do not want to commence where there is poor soil. I heard of a chap starting in this summer, paying a big price for land where he was going to start in keeping bees and chickens, and he wasn't anywhere near clover. He had no experience.

Then, again, I would say start three miles away from any other apiary. If I were starting again I would certainly look for a clover district. I would be much better off to-day if I had buckwheat. My experience says go now where you can get it, but we are a kind of a fixed institution, and we can hardly move away. We are too busy with other things. You can find clover where there is good growing soils all over the Province of Ontario. You can find more clover, however, to the square foot in what you might call the Kenora District than you can find anywhere else. I did not know this until I saw it this summer passing out through the west. When I reached the district of Dryden I never saw clover like it. I never saw clover growing so in the woods and up to the railway track. There is no district in Canada can compare with this for clover. It was a most beautiful sight to see. Being interested in clover in more ways than one I decided I would drop off there coming back and I did. I expected to see quite a good sized town. I enquired from a fellow standing on the platform where the town was and he pointed over to one little store. I enquired how I was to get to Dryden and he did not know. They had no means there to get me over. Now, then, there they grew immense quantities of alsike and I am sure there is one place they can secure tons of the best honey; you can always get good honey where you have alsike.

That is about the end of the clover until you get to Brandon. As you get around Winnipeg that is the wheat country. As a rule where there is a leaf foliage you get clover. Then as you pass on you get clover all the way up to the Rockies. I was around Brandon for a week, and I found they had honey of about the same quality as our own when I left, and they had the same quantity. I tell you this to let you know that they are just as able to produce honey as we are. Their long days out there give the bees an opportunity to work from sixteen to eighteen hours.

When we got into the prairie sections there were many flowers that I missed, but I was surprised to find that golden rod was in abundance.

As we got along we found honey was grown in different parts. As an example in the Eaton store at Winnipeg I went in and made enquiry as to what it was worth, and it was selling for forty cents a pound. They had the honey made by the Trappist monks. They can produce just as good honey out there as we can. I was surprised to find bumble bees in abundance up as high as Lake Louise and Banff, but I did not see the working bee to any great extent. Going into British Columbia I had an opportunity to visit many apiaries, and, of course, there red clover grows along the Fraser River as a weed, and I might say that in Dryden red clover is considered one of their worst weeds, so that shows you how natural it is to the soil. I went into one of the Hudson Bay Company's stores there in British Columbia and purchased some honey; honey which they considered wonderful, and it was very nice, although, it had a somewhat tart taste. There was red clover there everywhere. In the Rockies honey can be produced in the valleys, and the quality is fairly good. I had an old acquaintance out there in Vancouver, who is in charge of Rennie's warehouse, and he told me that they send out a great deal of bee supplies through British Columbia, so that there is room from coast to coast for beginners desirous of starting beekeeping.

The Chairman: I am sure we appreciate very much the interesting address that Mr. Couse has given us.

Mr. Smith: Supposing in one locality there are three or four people keeping say thirty or forty colonies each, would one of those interfere with another?

Mr. Couse: I would say certainly they would interfere with one another. You must not get close together. I have not had one sign of foul brood for twenty or twenty-five years, and I have not had an apiary within two or three miles from me, and I believe that is why I have not been troubled. If I were starting an apiary to-day I would not start it within five miles of another, and that is the best advice I can give you.

MANAGEMENT OF OUR OUT-APIARIES.

IONA FOWLS, MEDINA, OHIO.

From the end of our main honey-flow about July 15th or 20th till our slight fall flow in September, there is little nectar to be gathered in our locality. If left short of rations at this time, brood rearing may be curtailed and the colonies dwindle to such an extent that many will need to be united before going into winter quarters. Therefore, immediately after our main honey-flow, we try to leave our colonies with plenty of stores so that they may be kept in a prosperous condition during this dearth. Some advocate leaving a super on each hive during such a time. We have never made a practice of this, but it is no doubt a good plan for we have noticed at different times that when our extracting was delayed, that apiary from which the supers were removed the latest was in the best condition for winter.

For the last few years we have been re-queening half of our colonies at this season before the need of winter preparation. To re-queen the colonies every two years requires considerable work, but it is work that pays and pays well.

Since we winter in one story, we do not feed very early in the fall, for at that time our hives are so full of brood that there is no room for stores. Our feeding is not usually done before October, and sometimes as late as the first of November. We use a sugar syrup made of two parts of sugar to one of water. The colonies are usually crowded down on to seven or eight combs, the number depending upon the size of the colony; and at the space at the side is placed a tight-fitting division board and packing of forest leaves or shavings.

By handling over the combs we make our estimate on the amount of stores present, and then give enough sugar syrup so that each colony is left with about thirty pounds of stores for winter. Since the syrup is stored last, it will be used first and thus the honey will be reserved for use in the spring at just the time it will be most needed, for it is commonly recognized that honey is greatly to be preferred to sugar syrup for spring brood-rearing.

Above the brood-chamber we place a mat and a four-inch tray of packing. The entrance is left contracted to an opening three-eighths by two or three inches.

In the spring the colonies are examined for any possible cases of queenlessness and to make certain there are plenty of stores. As soon as more room is needed, the brood-chamber is also expanded to its normal size. The packing is left on as long as possible without inconvenience to ourselves—sometimes until the latter part of May.

When the colonies become strong enough to warrant it, a deep super is given and the queen allowed access to both stories. If a couple of frames of brood are placed in the super, there is no difficulty in getting the queen to occupy both stories. A week or so after the opening of the main honey-flow, the queen is put in the lower story under a queen-excluder.

A great share of swarming may be prevented by providing sufficient ventilation and super room and allowing the queen plenty of room for egg-laying. But even with these precautions there are always some colonies that make preparations for swarming. When this happens, we use a plan similar to the one given by Mr. Byer some five or six years ago. The plan is commonly spoken of as the "Demaree method," but I believe the first man who ever gave it in print was Mr. Byer. Nearly all are familiar with the plan or some variation of it. The method as we use it is as follows:

As soon as any danger of swarming arises, we carefully examine our colonies. If only young larvae or eggs are found in queen cells, the cells are torn down; but whenever more advanced queen cells are found, even at so late a stage as capped queen cells, the plan is put in operation. The hive is moved to one side and in its place is put a hive containing one comb with the queen and a small patch of eggs and young larvae, the rest of the hive being filled with frames of foundation or preferably drawn combs. Above this new brood-chamber is placed the queen excluder, two or three supers of drawn combs, and at the very top the old hive of brood with bottom board removed and all capped queen cells torn down. The supers between the two brood-chambers may contain a little honey, or they may contain dry combs, but it is very important that the super immediately under the top brood-chamber contain very little or no honey. In seven or eight days the apiary is again visited at which time the mode of procedure will depend upon whether one desires increase or not. If increase is wanted, the top brood-chamber is simply lifted off and placed on a bottom board in a new location. All but one queen cell may be torn down, or the bees or prospective queen may be left to attend to this detail, for after having been left on the old stand so long before moving, the force will be so weakened that there will be little danger of after-swarms. If we do not care for increase, but prefer to keep the whole working force together, we simply tear down all the queen cells in the top brood-chamber and leave it just where it is, allowing the young bees to hatch and augment the original colony.

It will be noted that this swarm-prevention plan very closely follows nature, but is really an improvement on nature, since it keeps the entire working force together; also the brood is in the warmest part of the hive where there is no danger of chilling. To all intents and purposes those bees in the lowest brood-chamber constitute a new swarm. They have empty combs, a great quantity of room for the queen to lay, and the young nurse bees or cell builders have been gotten rid of, for they are above taking care of the brood in the top brood-chamber. The condition of the top brood-chamber is quite similar to that of a parent colony—a few old bees but mostly young ones, a hive of hatching brood, and queen cells in the process of construction. This upper brood chamber is so far from the lower that the bees there seem to consider themselves a separate colony and complete the most splendid queen cells.

Without this plan it would be very difficult to manage our six or seven outyards. Now it is necessary to visit each yard only once in seven or eight days, and we can feel comparatively certain that no swarming is going on in our absence.

Our honey is not extracted until after the close of the honey flow. By leaving it on the hives in this way, we get a much riper, thicker, finer flavored honey which usually brings a little higher price in the market than does ordinary clover honey.

At each outyard is a bee-tight honey house in which the honey is placed as fast as removed from the hives. The extracting is done at a central honey house, the honey being hauled in by auto-truck. The honey is extracted by electric motor. It then runs through the strainer into a four-inch pipe which conducts it a distance of forty or fifty feet to a 2,800 pound tank in the cellar of our residence. From this tank it is drawn off by a gate into sixty pound cans for storing.

MR. MYERS: In connection with the Press Committee, in looking back over the work of the past year we feel that we are greatly indebted to Messrs. Sibbald and Byer for the interest they have taken in this work. They have both been conducting columns in the magazine which as you all know have been very interesting and educational and we feel that the members of the Association should express their appreciation, so we would recommend that an expression of thanks be made to Messrs. Sibbald and Byer.

MR. EVANS: I will second that motion.

The Chairman put the motion and on a vote being taken declared it carried.

MR. COUSE: I have been requested to announce a resolution or bring the matter before the attention of this Association with regard to some method being adopted by it to assist beekeepers in securing sugar from wholesale houses. This would probably have to be in some form of a certificate. A beekeeper goes to a wholesaler and tries to get sugar and cannot, and I think that if he had some proper identification from this Association that he was a practical beekeeper and needed sugar that this difficulty would not be experienced.

MR. HOLTERMANN: I might say I am somewhat connected with a wholesale grocery house, and the trouble is not altogether as Mr. Couse has explained it. It is more that the wholesaler is compelled to supply the retailers who are buying the varied lines in that business from him all year which makes it necessary that they be supplied first. The beekeeper comes to him for sugar, but he has got to consider the requirements of the retailers first.

MR. COUSE: Where there is plenty of sugar they will not let you have it. I do not know if you are aware of the fact, but the retail grocery houses of Ontario claim they will stop dealing with the Dominion sugar companies if they sell a pound of sugar direct to a farmer.

MR. HOLTERMANN: Another point is that the storekeeper does not tell what he pays the wholesaler for sugar, but unfortunately there are other people who just make a point of telling what they got their sugar for. As a matter of fact it isn't a good business principle for a wholesale house to deal with the consumer. If he does the retailer will say: "Well, if that is the way you are going to use me I won't buy anything else from you." They have got to protect themselves.

MR. EVANS: I think if beekeepers will deal directly with their grocers they will get satisfactory results. I have been obtaining my sugar from a grocery for ten years, and my arrangement with him is that he will give me the wholesale price plus twenty-five cents per bag to bring it to me.

MR. HOLTERMANN: Another point is that conditions are changed this year in the sugar situation.

MR. COUSE: Apparently it is not the desire of this Association to do anything along this line.

MR. EYRE: I think we should do something. If Mr. Chrysler will make a motion I will second it. This Association is here for the purpose of assisting the beekeepers and if Mr. Chrysler has a grievance it is only proper that he should be looked after.

MR. CHRYSLER: I think if our secretary would sign a card showing that the applicant for same was a member of this Association, that he has so many colonies of bees and requires so many pounds of sugar, that would cover the thing.

THE SECRETARY: I could not very well undertake that, for the reason that I do not know all the beekeepers by any means. I should think that a membership card would be sufficient for this purpose.

MR. BYER: I think if there is such a necessity existing, that the proper thing to do would be for that particular beekeeper requiring the sugar to write our secretary tell him his requirements and ask for a certificate; but the onus should be on the beekeeper to prove to the secretary that he is a practical beekeeper and is securing the sugar for his bees.

MR. HARKNESS: We had plenty of sugar down our way, and in fact our American friends were coming across and taking away carloads. I think if there could be a department where we could exchange ideas or conditions that it would be an advantage.

THE SECRETARY: I might say when the short crop report was sent out information was included that there might be a shortage of sugar, and we advised the beekeepers to secure their supply as early as possible. We have not heard of any beekeepers having difficulty in securing their sugar.

MR. CHRYSLER: My idea is to protect the small beekeeper and to put him on the same footing as the big honey producer, so that they can get their sugar at a wholesale price.

THE BEEKEEPERS' PART IN FOOD PRODUCTION.

PROF J. E. HOWITT, O. A. C., GUELPH.

Beekeepers as a general rule are inclined to take too little credit to themselves for the part they play in food production. They think only of the many thousands of pounds of good, wholesome honey that they produce each year, and forget that they, through the agency of the bees they keep, play a very important part in the production of fruits, vegetables and various commercial seeds. It has been said by some American authorities that the honey bee does more good to agriculture in its office as a cross pollinator than it does as a honey gatherer.

In order to understand the part that the honey bee plays in fruit and vegetable production, it is necessary for us to consider for a short time the purpose and structure of a flower. When we consider the function of a flower we find that it is not to beautify and adorn but to reproduce its kind. A flower is a shoot modified for the purpose of reproduction. When a flower is examined there is found an outer set of leaves known as the calyx, the chief function of which is usually protection. Inside the calyx is a second set of colored leaves which form what is known as the corolla, the function of which is attraction, that is to advertise, as it were, to the insects that the flower contains nectar and pollen or both. Inside the corolla we have a third set of floral leaves called stamens. Each stamen consists of a little stalk supporting a structure called the anther, which usually consists of two sacks which contain the pollen. The pollen furnishes the male element for fertilization. In the centre of the flower we have a fourth set of floral leaves commonly known as the pistil and a typical pistil consists of an ovary, style and stigma. The ovary contains the ovules and the style supports the stigma which receives pollen and enables fertilization to take place. This will be better understood when we have considered the subject a little further.

The ovules are the little bodies inside the ovary which, after fertilization, become seeds. The ovules contain the female element for fertilization. Fertilization consists in the union of the male element produced by the pollen grain with the female element in the ovule. In the great majority of plants fertilization is necessary for the setting of fruit and the production of seed. We have some few exceptions, such as navel oranges and seedless grapes.

Before fertilization can take place the pollen from the anthers must reach the stigma of the pistil. The transfer of the pollen from the anthers of the stamens to the stigma of the pistil is known as pollination, and we have two types of pollination. Self pollination when the pollen from the anthers of a flower reaches the stigma of the same flower and cross pollination when the pollen from the anthers of one flower reaches the stigma of another flower of a distinct plant of the same species. We have as a result two types of fertilization, self fertilization and cross fertilization. Briefly reviewing, we see that pollination is the transfer of the pollen from the anthers of the stamen to the stigma of the pistil, and that fertilization is the union of the male element produced by the pollen grain with the female element in the ovule, and that self pollination is the transfer of the pollen from the anthers of a flower to the stigma of the same flower and the resulting fertilization is self fertilization, and that cross pollination is when the pollen from the anthers of one flower reaches the stigmas of another flower of a distinct plant of the same species, the resulting fertilization is cross fertilization.

It must be born in mind that by a distinct plant is meant a plant produced from seed, not produced by budding, grafting, cuttings, etc. Different apple trees of the same variety are therefore, not distinct plants. It might at first glance be thought that on account of the close proximity of the stamens and pistils in the great majority of flowers that self fertilization would be of common occurrence, but as a matter of fact, we find that self fertilization is comparatively rare and the great majority of our plants are cross pollinated and cross fertilized; that is, the pollen is brought from a flower on some other distinct plant.

The most active agents in the transfer of pollen from one plant to another are wind, water and insects. Of these, insects are by all means the most important, and among insects none is more active in this respect than the honey bee.

The evidence in support of the importance of bees in the production of fruits, flowers and seeds, is of two kinds: Nature's evidence and man's experimental evidence. Nature's evidence are the numerous special adaptations found among flowers for insect pollination and the numerous special devices tending to prevent self fertilization. These devices are very emphatic evidence of the importance of insects in the transfer of pollen. They are as follows: First, plants which produce flowers in which the stamens and pistil mature at different times. Some have flowers in which the stamens mature first. For example—wild carrot, pea, mint and sunflower. Others have flowers in which the pistil matures first. Examples: Plantain, meadow foxtail and the apple and pear to some extent. Second, plants which have the stamens and pistils in different flowers. Sometimes both kinds of flowers, those with stamens and those with pistils are produced on the same plant. Examples: Corn, ragweed and pumpkin. In other plants the flowers with stamens are found on one plant and those with pistils on another. Examples: Date, hops and hemp. Third, flowers with different lengths of stamens and pistils, such as primrose and loosetrife. Fourth, self sterility. Flowers which must be cross pollinated before they can be fertilized are said to be self sterile. Many varieties of apples, pears, plums and peaches are to a large extent self sterile and must have pollen brought to them from other varieties before fruit can be produced.

The experimental evidence showing the importance of bees in the production of fruit and vegetables may be summed up as follows:—Professor Waite, of Washington, whose experiments are published in the Year Book of the United States Department of Agriculture for 1896 reports as follows: Results with the apple. Out of 2,536 blossoms covered with gauze netting only three apples set fruit. Of these the Baldwin, Spitzenburg and Fameuse set some fruit. The Baldwin which is often self fertilized gave four times better results when cross pollinated. Cross pollinated apples were larger, more highly colored and better supplied with seeds than those that were self pollinated. Results with pear:—The Anjou, Bartlett, Clapp's Favourite and Clairgeau we find to be completely self fertile, while the Flemish Beauty, Seckel and Angoulême were found to be more or less self sterile. Results with the plum:—Out of 153 blossoms covered of the Lombard, no fruit set, out of 475 blossoms covered of the Wild Goose no fruit set; out of ninety blossoms covered of the Japanese Plum no fruit set.

Professor Waugh, in the report of the Vermont Agricultural Station for 1896 and 1897, reports the following insects pollinating the plum:—Honey bee, Bumble bee, Wasp and some Short Tongued bees. Professor Waugh confirmed Waite's work with the plum, and draws the following conclusions from his experiments. The results indicate that insects are of prime importance in the pollination of the plum. Observation in the field shows that the common honey bees are nearly always the most active workers and the ones which by the character of their operation in the flower may be held chiefly responsible for the distribution of pollen.

Mr. C. H. Hooper in the Journal of the Royal Horticultural Society, March, 1912, reports that when insects were excluded from gooseberries and red and white currants, practically no fruit was formed. From cherries a single fruit set. From plums a few set fruit. From apples out of sixty-three varieties only one set and matured fruit and from raspberries fruit set, but results were not so good as with flowers exposed.

Darwin's experiment with white clover proved beyond doubt that cross pollination is necessary. Twenty covered heads yielded a single aborted seed, while ten uncovered heads visited by bees yielded 2,290 seeds.

In Bulletin 157, of the Kansas Agricultural Experiment Station, all extensive experiments show that the seed production in alfalfa is almost entirely prevented when insects are excluded from the blossoms.

Work done in California with the Bartlett pear has shown that the honey bee is of great importance in the insurance of a crop, and pear growers are advised to provide at least one hive of bees per acre of pear trees.

The presence of bees in an orchard does much to insure the crop. The value of the honey bee over other insects, from the standpoint of the horticulturist, is that their location can be controlled. If one goes through an orchard when the apples are in blossom you will find practically no insects at work but bees.

It is seen from both the evidence of nature and of man that bees are of great importance in the production of fruits, flowers, vegetables and seeds. Hence the beekeeper does not honestly steal his living, as has been stated by some, but his bees earn every ounce of honey that they secure from the plants they visit.

ONTARIO BEEKEEPERS' ASSOCIATION

CONSTITUTION AND BY-LAWS, 1919

1. This Association shall be known as the Ontario Beekeepers' Association, and shall be composed of those interested in beekeeping who become enrolled as members by paying the annual membership fee of one dollar and fifty cents, or as provided in clause 21 of the Constitution.

2. A general meeting of the members of this Association shall be held once a year, and shall be known as the annual meeting, the year to begin with the election of officers at such annual meeting and terminate on the election of their successors at the next annual meeting. At this annual meeting, or any other general meeting of this Association, ten members in good standing shall constitute a quorum.

3. The place of holding the next annual meeting shall be fixed by the members present at the annual meeting.

4. The Board of Management shall consist of twelve directors elected, one from each of the following divisions:

Division No. 1—Stormont, Dundas, Glengarry, Prescott.
Division No. 2—Lanark, Renfrew, Carleton, Russell and Ottawa.
Division No. 3—Frontenac, Leeds, Grenville.
Division No. 4—Hastings, Addington, Lennox and Prince Edward.
Division No. 5—Durham, Northumberland, Peterborough, Victoria and Haliburton.
Division No. 6—York, Ontario, Peel and Toronto.
Division No. 7—Wellington, Waterloo, Wentworth, Dufferin, Halton and Hamilton.
Division No. 8—Lincoln, Welland, Haldimand.
Division No. 9—Elgin, Brant, Oxford and Norfolk.
Division No. 10—Huron, Bruce, Grey and Perth.
Division No. 11—Essex, Kent, Lambton, Middlesex and London.
Division No. 12—Algoma, Simcoe, Muskoka, Parry Sound, Nipissing and Manitoulin.
Also one director from the Ontario Agricultural College and Experimental Farm.

5. No director shall hold office for more than five years. Retiring directors shall be eligible for re-election at the end of two years.

6. The Board of Management shall, from among themselves, elect a President, and two Vice-Presidents. They shall also appoint from among themselves, or otherwise, a Secretary and Treasurer, and shall also appoint at least three of their number as an Executive Committee.

7. Five members of the Board shall constitute a quorum.

8. Vacancies on the Board by death, resignation or non-acceptance of position, may be filled by the President, subject to the approval of the Executive Committee.

9. The officers of this Association shall be elected by ballot with the exception of the auditor, who may be elected by an open vote of the Association.

10. It shall be the duty of the President to preside at all meetings of the Association; to call for reports to put motions when seconded; to decide upon questions of order, and to declare the result of ballots and elections. The President, in connection with the Secretary, shall have power to call special meetings when necessary. The President shall be *ex-officio* chairman of the Board of Directors, and shall call it together when necessary.

11. In the event of the death or absence of the President, the Vice-President shall discharge his duties.

12. It shall be the duty of the Secretary to keep and preserve the books of the Association; to call the roll and read the minutes at every meeting of the Association; to conduct all correspondence of the Association; to receive and transfer all moneys received for fees and otherwise to the Treasurer, having taken a receipt for the same; to make out a statistical report for the Association and for the Government; to furnish the officers of the County and District Associations with forms for organization and annual reports and to give notice of Association and Board meetings through the press or otherwise.

13. It shall be the duty of the Treasurer to furnish such securities for the moneys of the Association as the Board may determine; to receive from the Secretary all moneys belonging to the Association, and to give receipts for the same; to pay them out

on order endorsed by the President and Secretary, and to render a written report of all receipts and disbursements at each annual meeting. He shall give security as provided by clause 17 of the Act Respecting Agricultural Associations.

14. Any County or District Beekeepers' Association in the Province of Ontario may become affiliated with this Association on payment of five dollars, which shall be paid to the Secretary on or before the first day of October in each year; but every local Association so affiliated must have on the membership roll at least ten members who are also members of the Ontario Beekeepers' Association at the time of its affiliation, and must continue to have a like number of its members on the roll of this Association while it remains in affiliation.

15. Every affiliated Association shall receive an annual grant out of the funds of this Association. The amount of such grant shall be fixed by the Board from year to year.

16. All grants to affiliated Associations shall be expended in prizes for honey shows, or for shows of apiarian appliances, or for lectures on subjects pertaining to bee culture, or for advertising district or county meetings, or for any or all of these, and for any other purpose not inconsistent with the objects of the Ontario Beekeepers' Association.

17. Every affiliated Association shall report to the Secretary of this Association (on a form to be supplied by the Secretary), ten days before the annual meeting of the Ontario Beekeepers' Association, which report shall be signed by the President and Secretary of the affiliated Associations.

18. County or District Associations seeking affiliation should forward to the Secretary an application according to the following form: "We, whose names are written in the accompanying form, having organized ourselves into a County (or District) Association, No. ......, desire to become affiliated to the Ontario Beekeepers' Association, and we agree to conform to the Constitution and By-laws of said Association."

19. Every affiliated Association that neglects or refuses to pay the annual affiliation fee, or neglects or refuses to forward to the Secretary the annual report on or before the date fixed, may be deprived of its affiliation privileges by the Board.

20. Should an affiliated Association become defunct after payment to it of the grant from this Association, any unexpended balance of said grant shall be forfeited and paid over to the Treasurer of this Association.

21. Membership fees of affiliated Associations shall be at least seventy-five cents. Any such members may become members of the Ontario Beekeepers' Association by paying an additional seventy-five cents to the Secretary of the affiliated Association, who shall forward said fee to the Secretary of the Ontario Beekeepers' Association.

22. Each affiliated Association shall be entitled to the services of an Association Lecturer (when such exists) once in each year, half the expense connected with such lecture to be borne by the District or County Association and half by this Association.

23. The order of business by which the meetings of this Association shall be governed, shall be at the discretion of the President, but subject to appeal to the meeting when objection is taken, when a majority vote of the members present shall decide on the objection, and in such cases the vote of the majority shall be final.

24. These by-laws may be amended by a majority vote of the members present at any annual meeting, or at a special meeting of the members called for the purpose of considering the same, and of which at least two weeks' notice shall be given by public advertisement.

Ontario Department of Agriculture

ANNUAL REPORTS

OF THE

DAIRYMEN'S ASSOCIATIONS

OF THE

PROVINCE OF ONTARIO

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

Printed by
THE RYERSON PRESS

To His Honour LIONEL H. CLARKE,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

The undersigned begs to present for the consideration of Your Honour the Report of the Dairymen's Association of Eastern Ontario for 1919, and the Report of the Dairymen's Association of Western Ontario for 1919.

Respectfully submitted,

MANNING W. DOHERTY,

Minister of Agriculture.

Toronto, 1920.

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DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO

OFFICERS FOR 1920.

Honorary President—John R. Dargavel, Elgin.
President—Wm. Brown, Dickinson's Landing (deceased).
First Vice-President—Geo. Smythe, Iroquois.
Second Vice-President—M. N. Empey, Napanee.
Secretary-Treasurer—T. A. Thompson, Almonte.

Directors.

1. Carleton	Thomas Hicks, North Gower.
2. Dundas.	Geo. Smith, Iroquois.
3. Frontenac.	Ed. Campsall, Hartington.
4. Glengarry.	A. J. Robertson, Martintown.
5. Grenville	James Anderson, Oxford Station.
6. Hastings, South	F. G. Knight, Belleville.
7. Hastings, North	S. S. McComb, Belleville.
8. Lanark	John Steele, Almonte.
9. Leeds.	R. G. Leggett, Newboro.
10. Lennox and Addington	M. N. Empey, Napanee.
11. Northumberland.	Jas. A. Armstrong, Warkworth.
12. Ontario, Victoria and Haliburton	Hy. Glendenning, Manilla (deceased).
13. Peterboro.	G. A. Gillespie, M.L.A., Peterboro.
14. Prince Edward	R. W. Ireland, Wellington.
15. Prescott.	A. Carriere, Curran.
16. Renfrew.	D. Muirhead, Renfrew.
17. Russell.	W. H. Olmstead, Bearbrook.
18. Stormont.	Wm. Brown, Dickinson's Landing.

Auditors—J. J. Payne, Brinston, and Morden Bird, Stirling.
Representative to the Toronto Fair Board—G. A. Gillespie, Peterboro.
Representative to the Ottawa Fair Board—Geo. Smythe, Iroquois.
Representative to the National Dairy Council—G. A. Gillespie and R. G. Leggett (Newboro).

FINANCIAL STATEMENT FOR 1919.

Receipts.	
Jan. 4—Cash on hand from previous year	$547 91
For members' fees	304 60
Legislative grant	2,500 00
Receipts from programme advts.	190 00
Money received from prosecutions.	837 50
Receipts from Dairy Exhibits.	9,797 25
Interest at Molsons Bank	20 99
Total payments	$14,198 25

Expenditures.	
Belleville pay sheets for directors.	$365 50
Toronto pay sheet No. 2, Executive.	162 00
Prosecutor's salary and expenses.	479 15
Advertising and Printing	748 67
Rural Publishing Co., subscribers to *Farm and Dairy*	204 40
Lecturers' expenses	147 25
District meeting expenses	211 15
Stationery, postage, telephone.	93 47
Officers' salaries	600 00
Official stenographer	90 00
Expenses *re* Dairy Exhibit	10,975 32
Total expenditure	$14,076 91
Balance on hand Jan 4, 1920.	121 34
	$14,198 25

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO

OFFICERS FOR 1920.

President—W. G. Medd, Woodham.
First Vice-President—J. Scott, Woodstock.
Second Vice-President—George Taylor, Guelph.
Third Vice-President—J. N. Allan, Dunnville.
Secretary-Treasurer—Frank Herns, London.

Directors.

T. Ballantyne, Stratford.
Jas. Donaldson, Atwood.
Robert Myrick, Springford.
Roland Johnston, Bright.
H. Hammell, Woodstock.
Geo. Kenny, Ettrick.

Representatives.

Western Fair, London—C. J. Donnelly, Lambeth, and F. Herns, London.
Canadian National Exhibition, Toronto—F. Herns, London.
National Dairy Council—Jas. Donaldson, Atwood, and W. G. Medd, Exeter.
Royal Stock Show—F. Herns, London, W. G. Medd, Exeter, and T. Ballantyne, Stratford.

Auditors.

J. A. Nelles, London.
J. C. Hegler, Ingersoll.

FINANCIAL STATEMENT FOR 1919.

Receipts.

Cash on hand from previous year	$185 80
Members' fees	254 00
Legislative grants	2,000 00
Money received from prosecutions	510 00
Sale of Dairy Exhibits	3,678 51
Advertising in Convention programme	205 00
Total	$6,833 31

Expenditures.

Cash paid for prizes	$514 00
Expenses for Convention	149 45
Stenographer's salary, $556.00; Directors' expenses, $166.79	722 79
Postage and stationery, $76.30; advertising, $97.74	286 04
Judges' fees and expenses	48 95
Lecturers' expenses	5 20
Prosecutor's salary, $191.55; prosecutor's expenses, $63.45	255 00
Periodicals for members	193 20
Cost of reporting	60 00
Purchase of Dairy Exhibits	3,678 31
Office expenses, light, cleaning and sundries	140 32
Office rent, $144.00; office furniture, 60c.	144 60
Telegrams and telephone, $75.34; express and cold storage charges, $24.33	99 67
Half fines paid to factories	255 00
Auditors' fees	15 00
Paid to funds, National Dairy Council	180 00
Total	$6,747 53
Balance	85 78
	$6,833 31

Dairymen's Association of Eastern Ontario

The Forty-third Annual Convention of the Dairymen's Association of Eastern Ontario, held in Brockville on Thursday and Friday, January 8th and 9th, 1920, was a success in attendance, attractiveness, and value of programme, as well as extent and educational value of exhibit.

PRESIDENT'S ADDRESS.

R. G. Leggett, Newboro.

The President expressed heartfelt pleasure in welcoming so many farmers and manufacturers to the Convention, especially since Leeds was his native county and the home of the late much lamented Senator Derbyshire.

"The quality of our Ontario cheese has been gradually increasing but the quantity for the past two years has been decreasing. Last year we were short about six million pounds and this year twice as much or over twelve million pounds. The cause for this is found in the failure of the corn crop of 1918, resulting in the cows going to the pastures in the spring of 1919 in a weak and ill-nourished condition. Much valuable time was lost before the cows were in good milking condition. Last July a very dry spell, just as the grain was heading, resulted in a very scanty grain crop. Consequently the scarcity and high prices of feed hindered the majority of farmers feeding for fall production of milk. The corn crop of 1919 was excellent and we hope that the cows will go to the pastures this year in good condition for giving a bountiful supply of milk."

In closing, the President expressed appreciation of the kindly consideration of Mayor Lewis of Brockville, the deep interest and liberality shown by the recent Minister of Agriculture, the Honorable George S. Henry, and the splendid assistance rendered the dairy trade by the Dairy Division of the Dominion Department of Agriculture in furnishing market reports.

OBSERVATIONS AS AN AGRICULTURAL REPRESENTATIVE.

H. Sirett, B.S.A., Brighton.

I believe the dairy industry has never been on a sounder financial basis in the Province of Ontario than at the present time. Prices received are attractive and I believe will continue so. I do not recall any time when dairymen in Ontario were so carefully computing the cost of production when considering the prices which they should receive for their products. Many residents of towns and cities have pointed out that the proportional increase in the prices of dairy produce is greater than the increases in the prices of many products of city manufacture and have asserted that because of this the dairyman was receiving more than his share in the general advance; when making this assertion they have quite ignored the question as to whether or not the price received for dairy products has ever borne any direct relationship with its cost of production. The fact that butter was purchasable at 15 to 20c. per pound in the early nineties is no proof that that price represented anything like a fair reward to those whose labor produced it. The facts are that the returns on farms in Ontario from my earliest recollection until the late nineties were so small that every means of adding to the farm income had to be taken advantage of, no thought was taken as to whether or not the labor supplied by the farmer's wife and family was adequately repaid; the one question was, could they by any amount of labor assist in increasing the total income; so the farmer's eggs and the farmer's butter were produced and sold at whatever price could be obtained, and that low price was made possible by the work of already overtaxed farmer's wives and the unpaid labor of the farmer's children. It is well for all those concerned, when discussing the question of a fair price for dairy produce at the present time, to remember that because the farmer or his wife in the past has given his or her labor for a very small return, that should have no influence on what is a fair price with which to reward the dairyman for his products both now and in the future.

We are told a great deal of the cow whose average production is around 3,000 pounds per annum. From a rather extensive knowledge of cows in general, I feel confident in asserting that there are just as many instances of poor production which must be laid at the door of the man in charge as there are traceable to the inferior animal. How can these conditions be bettered?

1. A real desire to do the very best possible with what we have will result in giving the cows that are already in our herds an opportunity to show what they are capable of.

2. A willingness to obtain and apply some sound technical knowledge on the subject of feeding and caring for dairy cattle.

3. A willingness to do the work ourselves until we have thoroughly mastered it before leaving it to others under our direction.

This need of a *better trained dairyman* includes my second feature that of *better care for the dairy cow*. I am glad to say that there is a very marked improvement in the care being given dairy cows in Ontario during the past ten years, this improvement has shown itself in better housing, better feeding and more attention. These three things supplied by a skillful and energetic dairyman will assure improved returns from the cows already in the dairy barns.

The third feature is one which has always been an exceedingly popular one with speakers on this subject, that is *better cows* and on this I propose to dwell at a little more length.

In any dairy herd where skillful management and good care is practised we can be assured that careful selection will follow as a natural course. The cows constitute the machinery in the hands of the dairyman. No skillful, industrious workman will be contented with any save the best implements with which to pursue his vocation; so we can rest assured that under the skillful, industrious herdsman the poor cows will receive small consideration and only the best producers retained in the herd, but there is need of some plan by which to keep up the supply of these best producers.

So far, we have been talking of the *cows* in the dairy herd. There is another factor which has an equally potent influence in the filling of the vacancies which are made by the rejection of the poorer producers, that is the kind of *sire* that is used. At the present time it would appear from the prices that are being paid for some dairy sires of all breeds that the dairymen were fully awake to the importance of the suitability of a sire, but unfortunately we are suffering from two extremes. Some few breeders have handicapped themselves by investing an undue proportion of their capital in purchasing, at high prices, sires, which were of somewhat dubious superiority; but far too many others are not willing to invest enough money to secure a sire whose use is justified by his ability to produce suitable dairy offspring.

During the past five years we have seen a wonderful impetus in cow testing. Those who have been most successful in developing cows to remarkable performances have disposed of the offspring of those cows at truly fabulous prices. It has been said that no price is too great to pay for a truly outstanding dairy sire, but in the ordinary dairy herd some attention must be given to the amount invested in the sire, but the errors in this direction have been comparatively few. There is one feature which is far too common, that is the keeping of a sire in every herd. Under such conditions it is not possible to pay the price demanded for a good sire. It is also true that there are not enough really first-class sires to supply the demand, if one is to be kept in every herd. There is absolutely no reason why one good sire should not serve for a considerable number of herds. The reason this practice has not been more general is due to some factors which require a little attention. The first is, the payment of a service fee. Many dairymen hesitate to pay a fee of $5 for a herd of 10 to 15 cows, quite overlooking the prospect of the increased value of the offspring from such a sire or the saving effected in the purchase and maintenance of a sire in their own herd. Others object to the inconvenience of taking cows away for service. I realize that the occasion for this frequently occurs at a most inopportune time; but if the dairyman is really in earnest in his desire to obtain the best stock in his herd, this inconvenience will not long prevent him from patronizing the best sire available.

COMMITTEES APPOINTED.

NOMINATING COMMITTEE: J. A. Sanderson, Thomas Hicks, W. H. Olmstead, Geo. A. Gillespie, Jno. Steele.

RESOLUTIONS COMMITTEE: Alex. Hume, Geo. Smyth, Wm. Brown, D. Muirhead, M. N. Empey.

FEEDING DAIRY COWS.

E. S. ARCHIBALD, DIRECTOR EXPERIMENTAL FARMS, OTTAWA.

Our experimental work in feeding includes, first the study of rations, and how to compound the cheapest ration with the common home grown feeds. We do this in order to produce the milk in the most economical way, and we supplement the farm roughage with such purchased concentrates and grain as may be necessary. We also study new feeds. We have done considerable work with elevator screenings, and we have clearly demonstrated where and how they should be fed and how much should be fed. A number of new hog feeds have been introduced largely from the experiments we have made. We have made a special study of the digestibility of foods. Then again we have made a study of the question of housing, and we have done a great deal of work on the different types of buildings and equipment in order to find out what is the cheapest and best for the commercial farmer, and our results have proven that house palaces are by no means the safest or cheapest investment for the average dairy farmer.

We are convinced that the future of Canada as a nation depends altogether on the live stock industry. Agriculture is dependent on the live stock industry in every way, soil fertility, the export trade, and in many other ways. Throughout Eastern Canada, it depends to a very large degree on the dairy industry. The dairy cow is undoubtedly the most economical producer of human foods from farm grown roughage or mill by-products. It excels the hog, its nearest rival: or the sheep or the steer, to say nothing about poultry. Probably one of the greatest errors which the average farmer makes in the feeding of dairy stock is in the lack of knowledge of the use to which these feeds are put. The average dairy cow usually uses about 50 per cent. of her food in self maintenance. If the average feeder would just look at the dairy cow as a business proposition he could double or treble his profit. If the average feeder would study each individual cow and realize the difference between her maintenance ration and her producing ration then he would not hesitate to buy the proper kinds of feed and feed them liberally. Liberal feeding is the basis of great production and economic production.

We will deal with the question of how to buy feeds and the best feeds to buy. The Experimental Farms is one of the heaviest purchasers of concentrated feeds in the Dominion. I try to buy just as cheaply as possible, and I try to feed as economically as possible, and yet a farmer near Ottawa told me he had purchased cotton-seed meal cheaper than I had. He purchased it for $76 and we were paying $81. I asked him what percentage of protein his contained and he could not tell me. He said he did not know—he thought 28 per cent.; and he actually thought 28 per cent. protein cotton-seed meal at $76 was cheaper than 40 per cent. at $81, whereas, in reality, he was paying 3c. per pound more for his digestible protein than we were. Another farmer came in and asked me if we fed cotton-seed meal. I said, "Yes; we look upon it as a proper feed when mixed with other meals and not fed to excess." He said, "I cannot get any results at all and I have been feeding about five pounds per day to my cows and some of them are sick. He was feeding cotton-seed meal and no bran or oats. If a man has a bountiful supply of roughage rich in protein, particularly alfalfa hay, with a liberal supply of clover ensilage and roots, his main object in selecting any concentrate it not to get a very large amount of protein but to get a feed which contains protein, carbohydrates and fats in about the same proportion as the roughage which he has, so that a cow will not have to eat 150 lbs. per day in order to reach her maximum production. A cow eating eight or ten or twelve pounds of grain with the roughage she is capable of handling will produce the greatest amount she is capable of producing. In other words, the feeding of cheap, succulent, palatable rich home grown feed is the first object in view, and in buying concentrates you should buy on the basis of the total digestible proteins as well as the digestible carbohydrates. I buy at the cheapest possible price in carload lots f.o.b., Ottawa, or whatever point we are buying for. If one is buying cotton-seed meal, one must remember that there is a certain manurial value there owing to the richness of the manure in nitrate of potash and phosphoric acid; a ton of cotton-seed meal will contain $13 in value: gluten will contain less than $8 fertilizer value: therefore we should take the value of the manure from the first cost of the feed. This is the order of cheapness of the various feeds at the present time. One hundred pounds of total digestible nutrients in ensilage at $3 per ton costs 51c., and one is still able to put a ton of silage into the silo for $3. The next on the list is clover hay at $24, $1.84; alfalfa, $28, $2.09; oats at $62 per ton, $4.08. Any boy in school can make the calculation as to the value of certain feeds, and that is something that I think should be taught in our schools.

The choice of feeds depends on many things. First we must consider the purpose of the feed. Is it for dry cows? Or is it for fattening? Or is it for growing calves? Or for the maintenance of dry cows in good condition? Or is it for the bull? Or is it for the production of milk? If it is for growing animals, oats and bran are unexcelled; if for fattening purposes, corn and barley, rich in carbohydrates, starch and fats, are unexcelled. If for milk production, oil cake, cotton-seed meal, gluten, all rich in digestible protein, are absolutely necessary. Whatever the proportions may be, in compounding a ration we must first have bulky foods for the dairy cow, and second we must have palatability. Several of our feeds might be grouped so as to contain practically the same amount of protein and carbohydrates and fat, and yet when you feed them to dairy cows you would get radically different results. In our work on screenings we found that the screenings as they came from the elevators contained a higher percentage of protein than after the black seeds are ground out, but with the black seeds in you have a feed that is not only very unpalatable, owing to the mustard, particularly the ball mustard, and even poisonous (When I say black seeds I don't mean wild buckwheat, but I mean lamb's quarters and the various mustards and pepper grass). With the black seeds out, owing to its increased palatability it is worth 50 per cent. to 60 per cent. more for the production of milk, and the growing of young stock and the fattening of hogs. We find that a change of feed is very necessary for a cow, but the changes should be made gradually. We have lessened the production of our cows by varying the ensilage and roots too quickly, and we have had cows become very ill from a too radical change. Suitability of the food is another very important consideration; we must give a food that will not in any way affect the flavor, quality or texture of the product. Digestibility is the final point to be considered.

We have had five years work in trying to discover the cheapest way to rear calves. To boil the whole thing down, our cheapest method of rearing is to give the calf whole milk for a month after it is born; and if the calf is pure-bred and very valuable and if it pays to force them along, we continue the whole milk for another six weeks: otherwise we begin to replace with skimmilk, and keep the calf on skimmilk for two weeks. We add a substitute for cream, and it may consist of real good calf meal which is well balanced, such as baby cream equivalent, Colwell's Calf Meal, Royal Purple, and others. These might be replaced by a good homemade calf meal consisting of equal parts of finely ground sifted oats, corn, wheat middlings, ground flax seed, and if a little blood meal is available about 5 per cent. of that and a little salt. This is uncooked, and it is a good substitute for the best calf meal, and certainly costs far less and well give just as good results if carefully and properly fed.

One of the greatest errors which we, as dairymen, are making in Eastern Ontario in the feeding of our dairy cattle is to feed our calves reasonably well, starve our yearlings, and have our two-year old heifers small, and then expect them to develop into good profitable cows. At no time in the history of a cow can you do more to stimulate production than you can during the three months previous to their first calf. There is no danger of milk fever or udder trouble unless they are in very filthy stables. We do not hesitate to feed heavily right up to within three or four days of calving, and by so doing we practically double the capacity of the udder, and we teach our heifers that quantity in production is what we are after. As soon as they have calved we give a warm drink, and feed them for two or three days largely on slops consisting practically of bran three parts, oats one part, with a small handful of ground oil cake or ground flax seed. At the end of the third day when we start milking out dry, we start to feed our heavy rations, and we build up a good strong producing cow. We have tried a good many rations for our milking cows, and we have found that the meal mixture should consist of 60 per cent. of the lighter, less concentrated feeds such as oats, bran, barley, and about 40 per cent. of heavy concentrates such as gluten, oil cake, cotton-seed, distillers' grain, or brewers' grain. If the cow is a very heavy producer and you are working her on a test, light fluffy grains such as brewers' and distillers' grain are absolutely necessary. Fully 50 per cent. of the meal mixture should be rich in protein. The standard that we have adopted during the winter months is that we use ten pounds of clover hay, four pounds of good clean oat straw, fifty pounds of roots and no ensilage; and, if roots are not available, thirty pounds of ensilage. The meal mixture consists of bran, oats, oil cake and cotton-seed in about the proportions which I have mentioned, and fed at the rate of about one pound for every four pounds of milk produced. That is decidedly better feed than the average dairyman in Eastern Ontario adopts. The amount of feed depends altogether on the individual cow, and what she is capable of producing.

The frequency of feeding is another point that we have been considering. If a cow is producing heavily and in actual distress with two milkings, it may be necessary to milk three times per day, and it is usually profitable to milk cows producing over 60 lbs. three times a day, and feed three times per day. Our Holstein breeders have demonstrated the benefit of milking three and four times a day. The Danish farmers milk three times a day. Years ago they found that it was the proper thing to do, especially their good, fresh cows. The extra milking and extra feeding are worthy of consideration if you have cows that will produce from 55 to 60 lbs. per day. What we want is more faith in ourselves. Why should we be afraid of the dairy industry when the world is calling for more butter and cheese, and for all kinds of dairy produce? We are afraid to invest a few dollars in concentrates because the price is high.

Q.—Is there any danger of polluting the farm with weeds by feeding screenings?

A.—Yes; the screenings should be well ground, and for that reason the Government has adopted the plan this year of selling ground screenings only, and you need not worry about the weed seeds.

Q.—You think the average farmer would be safe in buying them?

A.—Yes, absolutely safe.

Q.—Can you buy the ground screenings in bulk as well as in bags?

A.—I think only in bags now.

Q.—Can you tell us what it costs to produce a quart of milk at Ottawa?

A.—I cannot tell you what it is costing at the moment, but I know our cost would be greater than yours, because we have to keep extra men, and all our work has to be conducted in such a way that we can keep track of the production of each cow, and we have to conduct experimental work. Eliminating the extra expense, we find our figures very close to those which Prof. Leitch has been quoting during the past two years. Our average production is 8,000 lbs. per cow, and our average test is just about 4 per cent. butter fat. We figure all our grains at the actual cost price; and on that basis our cost for feeding a cow during the year was $76.87. We have the advantage of buying in carload lots, which cheapens our cost. Co-operation amongst farmers will save 25 to 40 per cent. in the cost of concentrates. At the present time our milk is actually costing us $3.14 per 100 lbs., but a number of our cows are in the lactation period, and we are feeding them for next year's work, and we are feeding them some grain yet. The cost of producing milk at Ottawa last year, all things included, was $2.96 per 100 lbs.

Q.—Do you feed molasses to the cows?

A.—Not as a rule: we carried on some experiments on feeding molasses some two or three years ago, and we found that it added to the palatability; but on account of the fact that molasses is composed largely of sugar and contains no protein to amount to anything, we found it was too expensive in proportion to the value of other meals. We found that a good grade of molasses, sprinkled on the hay with a sprinkler, and then turning over the hay three or four times was cheaper than buying the average molasses meal.

Q.—Do you milk the heifers out for the first three days?

A.—As a rule we do not milk them totally dry for the first three days.

Q.—Do you start a heifer with heavy feed before the inflammation is out of the udder?

A.—We put inflammation in the udder to stretch it out, and then we feed the heifer on oats and bran and a sloppy mixture: there is nothing that will take the place of roots in starting cows on the lactation period, unless it is June grass. We feed liberally on roots until the inflammation is over and before we feed any quantity of oil cake.

Q.—You stated your whole herd averaged 8,000 lbs. Do they keep up that average and produce a calf every year?

A.—That is what they are doing.

Q.—You mentioned feeding one pound of grain for every four pounds of milk, but you did not say anything about the quality of the milk. Surely it takes more to produce 5 per cent. milk than 3 per cent. milk?

A.—You are absolutely right; I was just giving the general average for the herd. For an average Jersey producing 30 lbs. of 6 per cent. milk, an Ayrshire producing 30 lbs. of 4 per cent. milk, and the Holstein producing 3.3 per cent. or 3.5 per cent., a different quantity of grain would be required. In order to feed properly, the milk must be weighed and the feed must be weighed. The whole point is that each individual cow has her characteristic, whether she is a high tester or a low tester.

Q.—Do you keep water always before the cows?

A.—Yes, except the young calves. After the calf is well started on the regular ration, then you can keep water in the water bowl. For milch cows or yearling heifers, or two or three year old heifers, I would not hesitate leaving water before them at all times, but they must have exercise, the same as in the old days when they were turned out to the pump, or to the nearest stream.

THE SCRUB BULL.

F. R. Mallory, Frankford.

The Hon. Mr. Doherty, Minister of Agriculture for the Province of Ontario, is very desirous that the scrub bull be eliminated from our dairy herds. What is a scrub sire? The dictionary definition for scrub is, "A small or mean fellow." He might be a pure-bred, he might be a grade, or he might be a common mongrel. We have a great many different kinds of farmers to deal with. I have in mind one man who in the last four years has had three different breeds of pure-bred bulls on his dairy farm. By making a law to eliminate the scrub bull we would not reach that fellow; he has had a pure-bred sire in every case, and he has a bunch of mongrel cows. I know another man, whom I would call a good grade farmer, who chooses a breed and sticks to it, and he buys a pure-bred sire of that breed every time he wants one. Then we have the pure-bred farmer who keeps his pure-breds, and we have the pure-bred farmer whose pure-breds are keeping him. We have the man who is turning out scrub pure-bred sires, and it is impossible for the Government to reach that man. The worst of them all is the man who is breeding to mongrels, anything to cause the cow to freshen again: that man is the worst offender of them all. I understand that there was a young bull sold from this district two years ago for $106,000. (Applause.) Was he worth the money? That is just one of the questions I want to discuss, our pure-bred business from the standpoint of the real successful average dairy farmer. How many of you in this room would feel that you could pay $106,000 for a young bull, or $5,000 for a sire, or even $1,000? I fancy the answer is that not very many of you would give that sum of money for a bull. The pure-bred dealer who has made a success of his business has more or less discouraged the average breeder, because it is impossible to pay these prices. That is what you think, but I am going to show you that you are wrong in coming to that conclusion. You may not be able to pay $106,000, but I am going to show you that it will pay to give a reasonable price for a good bull. How can we farmers get better sires? Can we in any way do anything through the Government, in the way of legislation? I do not think that the Government can do very much. One thing the Government can do, is to withhold grants from an agricultural society which would allow a grade or mongrel animal to be exhibited, and it seems to me that the Government might bonus bulls to be used by farmers in a certain community. I was at a railway station the other day and a drover was shipping a bunch of canners, and I saw one man come in there with a cow that I presume would bring $25; that man has been on a good farm all his life and his father and grandfather were there before him. He turned this cow into the station yard and he saw a little spotted bull there, and he took him home for the next year. He never asked what his mother or father was and knew nothing about his family history. Now, he was a good average farmer, but you could not get him to a meeting of this kind, or to a farmers' institute meeting. He has some money, and he could buy a $2,000 bull if he wanted to. That is the kind of man that we apparently cannot reach, and the kind of man that is doing a lot of harm. It was a nice little bull, and under ordinary conditions I would not have paid any attention to the transaction; but the day before I had received notice that I was to speak on this subject, and so I looked up the history of that bull. I think he weighed about 350 lbs., probably born last March. I found that he was sired by a Holstein bull, which would probably be 50 per cent. Holstein. I found that the dam was a mixture of a Jersey, Shorthorn and Ayrshire. I find that two of that man's neighbors intend to use that bull, and that means that three herds are going to be affected by this poor mongrel. Now, it seems to me that the only way we can get rid of the scrub bull is by a policy of education. I have sold a number of sires which have gone out to head the different herds in the country each year, and I found that after the Dominion Government campaign last year for greater production and better sires that there were many men came to me and purchased sires, and paid double the money that they had paid in former times, and I believe this campaign had a great influence on the sale of pure-bred sires. It seems to me that no matter what it costs it is money well spent.

It has been said that the bull is 50 per cent. of the herd, and I think that is quite true. We must remember that good females will not keep up the herd alone, no matter how good they are.

The question has been raised in my mind "How much can a man keeping ten cows afford to pay for a bull? If he raises his output of milk one pound per day he would raise his herd's average 3,650 lbs. in a year; put the price at 2c. per pound, and he would gain $73 in one year from an increase of one pound per cow per day. Now, if we get a good sire, and if we are going to raise ten calves this year and ten next year, we would have twenty calves, and if we increased our production one pound per day these calves would be producing $146 in cash. Now that sire will not cost you, under present conditions, more than $146, in fact he will not cost you more than $100 if you only want to increase your output one pound per day; and if you want to increase the output two pounds per day you can just double these figures, and we would find that we could afford to pay $292 for a sire. If we want to increase ten pounds per day, and that is easy to do on the average herd, we could afford to pay $1,460 for the bull. Most of us do not stop to figure these things out.

D'ARCY SCOTT, K.C., Secretary-Treasurer, National Dairy Council, gave a brief address on its organization, accomplishments and objects. His remarks will be found incorporated with the address given in the report of the Western Dairymen's Association.

WORDS OF WELCOME.

The Mayor of Brockville, MR. LEWIS, in extending a hearty welcome to the delegates reminded them that the late Senator Derbyshire, of Brockville, was one of the fathers of the Association. Regret was expressed that the Hon. Manning W. Doherty was unavoidably absent.

PURE MILK AND PUBLIC HEALTH.

DR. MARGARET PATTERSON, TORONTO.

I consider that I can honestly call myself a dairyman, because in the days when I was on the farm women took a very active part in the dairy work, and I feel that I did my full share. I do not believe that there is any other body in this country that has done as much for what is by far our most valuable asset as the Dairymen's Association. It took a war to teach us that we were a very wasteful people, and that in no way were we more wasteful than in human life and human health. Now that we have become awakened, the elimination of waste is really becoming the dominant note in the political, educational and social work of the nation. A few years ago we heard a great deal about the awakening of the social conscience. It means a great deal to have people realizing, as never before, that we are our brother's keeper. The health conscience is just awakening.

It has been charged that we are very much less concerned about human life than we are about the health of our animals, and the reason is that we do not realize the value of human life and human health. I believe a great deal of that is due to the fact that we are in a new country with a great many things pressing upon us, and in the press for material gain we forget the far more important thing, health. The first time, I believe, the health of the people was recognized as one of the national assets, was when the Roosevelt Commission made a complete survey and took into consideration the health of the people as a source of national wealth. The statistics that were collected were absolutely startling. It was proven that very unnecessary preventable diseases are costing the United States yearly a loss of $5,000,000,000 and the percentage in Canada is quite as high. We know to-day how unnecessary it is to have our children contract diseases such as were once considered a part of childhood.

The most important factor in building up health and eliminating disease is an adequate and pure milk supply.

I was very much interested in experiments which were carried on by Dr. D. C. McCallum, of the Johns Hopkins University, in which he has demonstrated that in almost every form of food, milk should be used. He says that in the health of a person milk is a great safety margin that makes up for the deficiencies in all our other foods, and that if milk is freely used in the cooking it does a great deal towards making up a proper balance. I want to quote Professor McCallum's own words, " I have come to the conclusion, after carefully analyzing the probable effectiveness of the various combinations of food employed in human nutrition, that the efficiency of a people can be predicted with a fair degree of accuracy from a knowledge of the degree to which they consume dairy products." That is quite a strong statement. In another place he says that a people may not achieve to any permanence as a nation, or maintain the position they have attained, unless they are large consumers of dairy products. You see what a very important industry you have.

I want to congratulate the Eastern Dairymen's Association on what you have been able to accomplish. Some years ago the greatest source of spreading infectious diseases was the milk supply. It was possibly due to the war that we realized the importance of human life. When we saw the tremendous loss of life that was occasioned by the war we stood appalled, especially when we knew that as the result of the war 15,000,000 people had lost their lives. Yet, and these are facts, during the same years of war, more than 15,000,000 people died of tuberculosis. We knew that at the very worst the war was temporary in its slaughter, but the slaughter by tuberculosis will go on and on, until we each and all do our bit to wipe it out. It is an absolutely unnecessary disease, and it is a disease that we, as a nation, can very easily stamp out if we squarely face the facts and do what is necessary. One great source of infection is milk from a tubercular cow. Let me urge you to co-operate with the Government in stamping out tuberculosis in your herds. One of the essential things is that the people shall be properly fed, and that demands an adequate milk supply from healthy cows. I do not think we are consuming as much milk as we should. Another disease that is certainly costing our country quite enough to pay the national debt is typhoid fever—a disease that used to be very frequently conveyed by an unclean milk supply.

At a great International Convention called together by the Red Cross, that met recently in the South of France, with experts from all over the world, to discuss what was necessary to do in order to try to repair the terrible ravages of the war, it was the unanimous opinion that the most important thing in the world was to try to conserve the child life of the various nations. We know that child life can only be conserved and brought to its best development physically and mentally by the child having a proper amount of milk. We say that we are going to see in our day and generation that every child has its rights, and that means that every child, no matter where it is, or what the position of its parents, that that child should have at least two pints of milk per day, and I agree with some who say three pints of milk per day. If we realized the food value of milk there would be a great deal more milk consumed than there is at the present time. We would have a great deal more of it consumed in the country, because we often find that children in the country do not like milk. I think every child would like milk if it got it in proper form and proper condition. It is a natural thing for children to like milk, and I think that one thing we should do in the country is to advocate the use of milk to a greater extent.

The young human being must have as much care regarding his food and sanitation as we give to the young of our animals. I was very much impressed in hearing a doctor, who travelled all over Canada in the interest of sanitation and child welfare, describe the kennels in which the black foxes are kept in Prince Edward Island, how absolutely every precaution is taken for the care of their health and their comfort. They even have a dictaphone in the kennel, so that if a mother fox should happen to overlie one of her young its squeal will be heard in the house and it is rescued immediately. The overseer of these fox farms receives $2,000 per year there and a free house. The doctor stated that in the school section adjoining there was a very unsanitary and dilapidated building used as a school house. There were fifty children crowded into one room and one girl received the wonderful salary of $300 per year to look after the education of these fifty children.

You may wonder why it is that I speak of such things at a Dairymen's Convention, but it is simply that I want your help as an intelligent body of people to help conserve the health of our Canadian people.

It is an absolute fact that milk, for its food value, is the cheapest product on the market to-day. I thank you.

Dr. Jas. W. Robertson gave an address which was much appreciated. For similar address see report of the Western Ontario Convention.

ADDRESS.

A. C. Hardy, Brockville.

My particular line is the raising of pure-bred Holstein stock. I have great faith in the Holstein, but I am not one of those who believe that it is the best of all the dairy breeds, because I have never been able to believe that any breed is the best. I think the best breed is the breed that a man thinks is best for his farm. The reason I took up the Holstein breed was that I found that this Eastern District was being rapidly filled up with Holstein cattle, and I believed their popularity was on account of the large flow of milk they gave. I do not believe in scattering my energies, and I have always stuck to the Holsteins. After a great many years' work I have had some measure of success. I gave up the practice of law for farming, and I have not regretted it either from the point of pleasure or from any other point.

I believe that one of the greatest moves that is going to bring improvement is in the establishment of what are called accredited herds, i.e., a herd that is free from tuberculosis. That system has been carried out in the United States for a great many years, and where five years ago there was a matter of about 40 or 50 herds under government supervision, for the eradication of this disease, the last figures show 15,000 or 16,000 herds that are either in the accredited list or preparing to enter that list. In Canada we have just started, under the Minister of Agriculture, to do this work. I believe there is only one system of getting rid of that disease, and that is for every farmer to put his herd under government supervision, and let the government take charge of the animals that are more or less diseased, and have them either slaughtered or isolated.

I believe that there is a great future for dairying in this country. I believe the time is coming when we are going to see changes in our system of dairying. Many of you can remember the great changes that were made when the cheese factories were started in this country. They completely revolutionized the whole system of dairying. It gave the farmer a sure and certain outlet for a certain number of months in the year. To-day there is another great change and we cannot tell what its effect is going to be: I refer to the condenseries, scattered from one end of the province to the other. I believe that they are going to have an even greater effect on the dairying industry than anything we have yet seen. Whatever the result may be, we can rest assured that the time of the farmer has come, and is coming more and more. The farmers have been held back for many years, and as a brother farmer I rejoice to know that the farmer is coming to his own. I believe the farmer movement will be a good thing for Canada and for both political parties.

PRIZE LIST.

Butter.

56-lb. box September Butter.—Whyte Packing Co., Brockville, 95; T. J. Newman, Lorneville, 94.9; H. F. Newman, Gamebridge, 94.7; James Small, Prescott, 94.1.

56-lb. box October Butter.—Whyte Packing Co., Brockville, 95.1; L. E. Smith, Brockville, 94.9; H. F. Newman, Gamebridge, 94.8; T. J. Newman, Lorneville, 93.6.

Creamery Prints.—Whyte Packing Co., Brockville, 95.2; L. E. Smith, Brockville, 95; T. J. Newman, Lorneville, 94.4; H. F. Newman, Gamebridge, and James Small, Prescott, 93.8.

CHEESE.

September Coloured—James F. King, Almonte, 98.9; E. A. Tolles, Kinburn, 98.8; T. M. Tobin, Summerstown, 98.5; Joseph S. Ragsdale, Carp, 98.4; Will and B. Lowry, Carp, 98.3; Elias Trueax, Avonmore, 98.

October Coloured.—Will and B. Lowry, Carp, 98.4; E. A. Tolles, Kinburn, and C. L. Brown, Prospect, 98.3; A. G. Wiltsie, Vankleek Hill, 98.1; R. H. Lowry, Kinburn; Wm. R. Linn, Bellview; Alex. J. Cameron, Cornwall, and A. McConnell, Merrickville, 97.9; Lorne Emmons, Newboro; David Kelly, Merrickville, and Gensmer Clark, Dunbar, 97.8; George H. Alguire, Osnabruck Centre; Peter Grindon, Vankleek Hill; W. J. Bateman, Harold; W. D. Marshall, Hall's Bridge, and W. F. Sines, no address, 97.7.

September White.—Benson Avery, Kinburn, 99.4; E. A. Tolles, Kinburn, 98.7; Stanley H. McNeil, Eldorado, and A. G. Miller, Carleton Place, 98.5; Gensmer Clark, Dunbar; W. P. Kilfoyle, Franktown; W. F. Sines, North Gower, and W. O. Douglas, Warsaw, 98.4; Alex. J. Cameron, Cornwall, 98.3; William Landon, Rockport, 98.2.

October White.—E. A. Tolles, Kinburn, 99.6; Gilbert Rancier, Wales, 99.5; George A. Stevens, Manotick, 99.3; Alex. Clark, Williamstown, 99.2; Gensmer Clark, Dunbar, and Ernest Weatherly, Dunrobin, 99.1; C. L. Brown, Prospect, 99.

Flat Cheese.—W. P. Kilfoyle, Franktown, 98.9; J. F. King, Almonte, 98.6; Edward Carter, Thomasburg, 98.5; W. O. Douglas, Warsaw, 98.4; Alex. J. Cameron, Cornwall, 98.3; Thomas Lloyd, Halloway, and C. A. Wilkins, Mille Roches, 98.

Stilton Cheese.—John Snetsinger, Dickinson's Landing, 97.8; Gilbert Rancier, Wales, 97.7; Albert Gauthier, Mille Roches, and C. J. Brennon, Deseronto, 97.3; Clifford Morris, Mallorytown, 97.2; Albert Lapointe, Martintown, 97.1.

The G. N. Chambers special prize of $10 was awarded to Edward Carter, Thomasburg.

E. A. Tolles, Kinburn, won the silver trophy presented by the instructors and cheesemakers for the highest scoring cheese; Freeman Brown, of Oxford Mills, the Canadian Salt Company's silver cup, and the Whyte Packing Co., Brockville, the buttermakers' silver cup.

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JUDGE'S REPORT ON BUTTER AND CHEESE EXHIBITS.

MR. J. H. SCOTT, Chief Butter Grader for the Province of Ontario, reported a great improvement in the quality of the butter exhibited, in two or three respects: In the first place, the general manufacture of the butter on exhibition is very uniform; with the exception of one box, there is scarcely any free moisture shown. That is a great improvement on the butter that we have seen on exhibition in Ontario in the past few years. There was only one sample that showed anything on the tryer in the way of large beads of moisture, all the other samples were free, and had a nice close texture. That is the type of butter that we want—a close textured almost dry appearing butter. The advantage of that kind of butter is that there is very little shrinkage in storing it, and it is usually more uniform in color. In the matter of flavor there is some improvement over last year, in fact there is more improvement in that respect than in any other. Last year the butter that had been stored from September until Exhibition time had in a great many cases become fishy, which is a characteristic of our Ontario stored butter, especially where the cream has not been properly pasteurized. There are six September and six October samples on exhibition, and not one of them has any trace of fishy flavor, and that goes to prove that the cream has been well pasteurized. The whole exhibit is a credit to the Association, and it is a great credit to Mr. L. A.

Zufelt, who has been the instructor at these creameries. He is teaching them along uniform lines, and he has got them all making butter along proper lines. The prizes were awarded as follows:

Mr. H. Morton reported on cheese judged by himself and Mr. Geo. H. Barr. In the September White class, out of 72 entries there were 58 that scored 96 points and upwards. In the September Colored Cheese, there were 71 entries of which 38 scored 96 and upwards. In Flats, there were 63 entries, 26 scoring 96 points and upwards. In Stiltons, there were 24 entries, 6 scoring 96 points and upwards. There is the greatest number of high scoring cheese here that I have ever had the privilege of judging. The cheese showed a general uniform quality of texture. Another point I observed was the improvement in the finish of the cheese. I do not think there is anything that appeals to the buyer, when he enters a curing room, like a good appearance in the cheese. If the cheese are put up nice and stylish, and have a clean appearance, it immediately creates a good impression, and makes the buyer feel like overlooking any other defects, if there are any. Some years ago it was impossible to get the uniform quality and texture and finish that we see here to-day, and the instructors and Mr. Publow are to be congratulated on the great improvement they have been able to bring about. I understand that 75 per cent. of the cheese on exhibition were picked from the ordinary every day make of the factory, and not made specially for exhibition. The cheese makers and instructors from the different sections are to be congratulated on the high uniform quality of the cheese. It certainly speaks well for the system of instruction that you have.

Mr. G. G. Publow expressed appreciation of the efforts of the makers and instructors in furnishing such a splendid exhibit. The great majority of the cheese shown here were not made for exhibition, but were selected from the shelves in the factory. We want to show the marked improvement that is being made from year to year in connection with the work.

REPORT OF CHIEF DAIRY INSTRUCTOR AND SANITARY INSPECTOR.

G. G. Publow, Kingston.

I have the honour to present for your consideration my seventeenth Annual Report of the work of Dairy Instruction and Sanitary Inspection for the season of 1919.

With the exception of a few minor changes, the general nature of the work and the staff of Instructors have been similar to other recent years; one of the more definite changes being that of transferring the duties of Creamery Inspection to the supervision of Mr. Zufelt. There were few changes in the personnel of the Cheese Instructors, the only ones being the transferring of Mr. Wright to the vacancy caused by the death of Mr. A. H. Wilson and the appointment of Mr. F. Brown to the Renfrew district.

The division of districts was not altered in any way, so that the manner of preparing a report of the work done is necessarily similar to that of other years, and for the conveyance of comparisons I have again prepared in tabulated form the detailed figures and statements as furnished to me by the individual Instructors.

I will not attempt to read all these to you, as they will be found in the annual report of the Eastern Ontario Dairymen's Association later on, but there are a few of the more important totals in which perhaps you may be interested for they represent in concise form an accurate summary of the cheese manufacturing business in the whole eastern part of the province.

CHEESE FACTORIES.

There were 789 cheese factories in operation this year, some 28 less than in 1918. The principal reason for this decrease being competition from condenseries and milk and cream shipping, owing to the increased demand for milk and cream in the cities and towns.

Nine new factories were built and additional improvements, repairs and equipment, were made to 408 of the others, the total expenditure being approximately $210,000. This includes 32 new plants which were equipped to manufacture whey butter and 137 for the skimming of the whey.

WHEY BUTTER.

Two hundred and nine factories made whey butter and 183 skimmed the whey and shipped the cream, as compared with 177 making whey butter and 46 shipping whey cream last season.

Six hundred and fifty thousand, nine hundred and seventy-seven lbs. of whey butter were manufactured, valued at $292,822, while the value of the whey cream shipped was $212,487, making a total of $505,309 from this industry alone. Evidently the high prices being paid for whey butter and cream have done much to stimulate the manufacture accordingly, as the total values this year show an increase of $189,639 over that of last season.

The number of patrons of cheese factories this year decreased from 30,088 to 28,908, and the number of cows from 279,849 to 267,411. From these there was obtained 883,175,685 lbs. of milk, a decrease of over 40 million lbs.

MAKE OF CHEESE.

The total make of cheese during the six months ending October 31st was 79,787,605 lbs., nearly 4 million lbs. less than in 1918.

The average yield, too, was slightly less, being 11.00 lbs. milk per lb. of cheese as compared with 10.99 last season.

One feature, however, that was greater was the average price, which was fully 27c. per lb., compared with 22½c. last year, making an increase in the total revenue of nearly $3,000,000.

MILK TESTS.

The Instructors made 27,790 tests of milk for composition and 6,680 sediment tests, and it is disappointing to know that the number of cases of adulteration more than doubled over last season, there being 20 in 1918 and 46 this year, yielding in fines $1,675.

It seems to me that every year we have more convincing evidence of the advisability of having all milk paid for on a fat basis, for in spite of heavy fines imposed for skimming and watering, the practice still goes on unchecked.

TABULATED REPORT OF THE INSPECTOR

Instructor and Group	No. of factories in group	No. of full day visits	No. of call visits	No. of patrons	No. of patrons visited	No. of samples of milk tested for adulteration	No. of samples deteriorated	No. of sediment tests made	No. of factories pasteurizing whey	No. of factories making whey butter
Almonte— Freeman Brown	41	63	132	1,696	38	1,098	......	673	1	12
Alexandria— C. B. Larry	39	44	212	1,187	21	1,187	4	400	......	......
Brockville East— Fred Wright	40	23	183	1,200	12	536	2	294	......	10
Brockville West— S. S. Cheetham........	42	53	145	1,097	40	1,010	3	......	3	31
Brockville North— Peter Nolan	42	41	235	1,207	20	1,050	6	265	......	23
Belleville— Hugh Howey..........	34	52	238	1,560	147	2,700	......	780	2	1
Cornwall— J. Buro...............	43	56	300	1,530	100	900	5	200	9	4
Campbellford— R. T. Gray	34	49	154	1,340	46	1,936	4	250	1	9
Kemptville— W. G. Gardiner	40	75	252	1,613	25	1,223	......	256	2	8
Kingston— Fred Clark	51	66	297	1,317	18	1,876	3	356	7	7
Peterboro— R. W. Ward	32	81	157	1,414	163	220	......	744	3	15
Madoc— C. F. Linn	33	79	203	1,069	30	1,370	2	205	1	12
Morrisburg— C. W. Norval	47	46	201	1,457	20	976	2	48	......	30
Lanark— J. H. Echlin...........	34	53	192	1,405	80	435	......	129	2	19
Ottawa East— A. McKinley	50	58	340	1,514	......	1,866	......	300	......	5
Ottawa— Jas. Mitchell..........	40	67	355	1,280	37	1,024	2	350	......	6
Picton— Jas. Irwin............	30	43	243	2,007	25	2,229	4	200	......	12
Plantaganet— Jos. McAllister	36	47	231	1,136	12	672	3	459	1	......
Napanee— G. H. Bensley.........	37	23	205	2,660	25	4,719	5	145	......	5
Vankleek Hill— G. H. Barker	42	31	427	1,219	43	963	1	626	......	......
	787	1,050	4,702	28,908	902	27,790	46	6,680	32	209

Then, too, as the average price of cheese has increased the difference in the actual value of milks of different compositions is most marked and I cannot understand how year after year patrons will submit to such an unfair, unequal distribution of their earnings as the pooling system provides when it all could be accurately remedied by the use of the Babcock test.

The number of personal visits made to the patrons by the Instructors was 902 and in addition to these, addresses were given at some 160 factory meetings. Both of these are, I think, of great educational importance to the industry, and I would like to see greater efforts each year along this line. The patrons themselves are showing greater interest and appreciation and marked results should be forthcoming, especially as the high prices of dairy products are maintained.

FOR EASTERN ONTARIO.

No. of factories shipping whey cream	No. of factories paying by test	Average % of fat in all tests made	Lbs. of milk delivered from May 1st to Nov. 1st	Lbs. of cheese made from May 1st to Nov. 1st	Average lbs. of milk to make a lb. of cheese	No. of factories with cool curing rooms	No. of factories which made improvements in buildings or plant	Estimated expenditure, including new buildings	No. of new factories built	No. of new silos built	No. of patrons using milking machines
6	7	3.6	32,135,375	2,939,071	10.93	3	17	12,475	1	11	27
13	13	3.54	36,007,636	3,272,156	11.00	......	14	10,600	....	......	80
4	1	3.3	41,760,568	3,689,495	11.31	......	15	3,700	....	15	49
3	3	3.5	52,306,355	4,603,489	11.36	3	26	14,500	....	1	65
......	......	3.46	54,737,513	4,867,513	11.24	1	10	4,600	1	7	75
29	......	3.47	46,742,646	4,131,532	11.31	7	......	....	....	3	65
21	13	3.7	52,074,998	4,861,098	10.71	3	43	17,420	....	30	70
18	......	3.43	41,000,630	3,796,063	10.76	3	26	18,150	....	14	32
9	11	3.4	48,098,359	4,228,890	11.30	1	27	11,541	....	22	82
7	1	3.41	47,944,600	4,307,690	11.13	......	14	17,170	3	6	31
3	12	3.38	28,471,497	2,488,747	11.44	11	24	1,118	....	30	26
9	......	3.5	37,218,082	3,270,139	11.38	2	10	10,375	....	5	58
4	1	3.48	58,691,194	5,371,327	10.91	......	41	4,000	....	36	46
......	1	3.5	32,320,659	2,869,147	11.19	1	11	4,435	....	30	30
8	9	3.6	51,103,380	4,830,420	10.57	......	28	11,830	1	5	42
9	19	3.5	42,206,292	3,768,993	11.19	1	13	14,825	2	17	75
13	......	3.31	47,424,573	4,153,477	11.41	8	20	11,150	....	12	48
4	2	3.7	24,044,917	2,334,274	10.30	......	20	5,688	....	4	3
14	......	3.55	68,336,988	6,245,654	10.93	3	12	6,348	....	8	80
9	1	3.6	40,549,296	3,758,440	10.78	......	17	13,800	1	8	30
183	94	......	883,175,658	79,787,605	......	47	408	209,725	9	264	1,014

QUALIFICATIONS OF CHEESEMAKERS.

For our own information and in case of discussion pertaining to the paying for milk on a fat basis I had a census made of the qualifications of cheesemakers and conditions of the factory equipments, and the summary of these is as follows:

Three hundred and eleven cheesemakers have attended a Dairy School; 110 hold diplomas; 435 have permanent certificates; 119 have one-year permits and 123 have been working on approbation.

The total estimated value of the cheese factories in Eastern Ontario is $2,367,000, and 166 have suitable apparatus for the testing of milk.

It will be seen from these figures that only about 25 per cent. of the cheesemakers are qualified to test milk, and only some 20 per cent. of the factories have the necessary apparatus. It is my opinion that every factory should be provided with a lactometer and Babcock test, and every maker should qualify in the use of them. If this were done we no doubt would find less tendency to adulteration and the question of paying by test would be greatly simplified.

An addition to our regular districts has recently been added in the gradually growing "Northern Ontario Section" which this year had some 24 factories with 578 patrons. We had no regular Instructor for these, but Mr. McAllister made one visit to each during the season, besides giving several days' instruction to the makers in groups; afterward, in the evenings, addressing meetings of the patrons.

The following is the report as furnished by Mr. McAllister, covering his work in this new field.

Report of Cheese Factories in Northern Ontario:

No. of factories	24
No. of patrons	578
No. of cows from which milk for cheesemaking was obtained	3,475
No of lbs. of milk delivered to the cheese factories	8,545,663
No. of lbs. of cheese manufactured	837,414
No. of lbs. of milk required to make 1 lb. of cheese	10 20
Average lbs. of milk per cow	2,454
No. of new factories built	2
No. of factories that made improvement in building or plant	8
Estimated expenditure including new buildings	$3,845

It seems only fair that the factories in this district should have a full-time Instructor, and I think the Department would be well advised in appointing a suitable man for the work, for as the other branches of the industry are gradually taking the milk away from the cheese factories situated close to railroads and larger centres, it becomes necessary for those farther away to devote more attention to the manufacture of cheese in order to keep up the Canadian supply.

Quality of Cheese.

In regard to the quality of the cheese during the season I have very little new to say. I believe, however, that the average quality was never better, as the number of rejections was very small. It is always very noticeable each year, that in all factories where well qualified, properly trained makers are employed there is seldom any trouble with the quality of the cheese, but, on the other hand, nearly all the inferior cheese can be traced to the factories where inexperienced men are employed; so that evidently the maker is probably the greatest factor in the determining of the quality of the cheese output, as besides being able to do the work he is also able to obtain the other requirements, such as a clean surrounding and a pure milk supply.

I think we can all agree that the past season has undoubtedly been, in a financial way at least, the most successful one in history for dairymen in general. The principal reason for this, of course, lies in the fact that the demand for our products was greater than the supply, and so long as such is the case we can expect high prices. We should not, however, depend entirely on present conditions for in due time the effect of war in foreign countries will be overcome and the markets will change accordingly. It will therefore be advisable that there be no lessening in our efforts to maintain or improve our standards of quality and in addition, if necessary, devote some attention to the advertising or placing before the consuming public, particularly in our own country, the real values of dairy products in our regular lists of food necessities.

Before closing, I would like to express my appreciation of the efforts put forth by the Instructors in trying to bring about improvements in their respective districts and also for the ready assistance given to myself in my work as Chief Dairy Instructor and Sanitary Inspector.

THE DAIRYING INDUSTRY—A REVIEW.

J. A. Ruddick, Dairy Commissioner, Ottawa.

When the association met in convention a year ago you had every reason to believe that the trade in dairy products would revert to the pre-war status during the season of 1919. Perhaps the wish was father to the thought, but in any case your hopes, if you had any in that respect, have not been fully realized.

Maximum selling prices and control of distribution are still in force in the United Kingdom, and, judging by the rations allowed at present, there is just as much reason for the restrictions as there was on the day the armistice was signed.

As a matter of fact the supply of dairy products in the United Kingdom has not yet shown much improvement, and were it not for the accumulated stocks in Australia and New Zealand which have been coming forward during the last few months, the shortage would have been felt very severely.

During the war, thanks to the British navy, the United Kingdom was the only European country able to procure supplies of dairy produce from overseas, but when the shipping blockade was lifted the starving countries of continental Europe came into the market and provided a new outlet.

It was only the difficulties of finance and the handicap of the low rate of exchange which prevented the business with the continent of Europe from being much larger than it has been.

Purchase of Cheese by British Committee.

I do not wish to revive dead issues, or to direct your minds to things which are past and gone when we should all be looking forward, but as there was more or less dissatisfaction over the policy of the British Ministry of Food in connection with the purchase of Canadian cheese last summer, it seems to be desirable that a brief statement of the facts in connection with this matter should be made at this time.

The removal of the restrictions on the imports into the United Kingdom in the early part of the season opened the way for private trading, and for a time there was considerable business done at advancing prices, in spite of the fact that the retail selling price of 36 cents was still in force.

The business came from the large multiple shop companies and others who were determined to secure full supplies of cheese, free importation being permitted, even if they had to be handled at a loss. This competition, together with inquiries and some actual business from continental Europe which induced speculative buying, forced prices up to a point above that which could be paid for cheese to be retailed in the United Kingdom at a profit under the fixed price of 36 cents. The regular

British importers and wholesalers, who had been receiving a good commission on all controlled imports, now found that in many cases they were getting neither commission nor the business.

Whether this fact had anything to do with the decision of the Ministry of Food to again negotiate for Canadian cheese, I am unable to state positively, but I think very likely it had. At any rate an announcement was made in London one day that after a certain date all imports of cheese would be subject to the importers' maximum selling price of 28 cents, and that representatives would be sent to Canada to arrange for the purchase of our surplus cheese. The result of this action, together with the fact that the continental demand had suddenly collapsed, was to stop buying in Canada over night.

When the representatives arrived in this country and offered 25 cents, delivered at Montreal, for 20,000 tons of cheese, it is unnecessary for me to say there was considerable dissatisfaction, because it was felt that 25 cents was a big drop from the prices which had been ruling, and so it was. The prices which had been paid, however, were very largely fictitious and speculative, involving some very heavy losses on the part of the dealers.

Had it not been for the offer of the committee there seems no doubt that the price of cheese would have fallen, temporarily at least, to about 23 cents in Canada, for that was as much as could have been paid for cheese to be sold retail in England at 36 cents and leave a profit for those who handled it, after bearing the loss on the prevailing rate of exchange.

COST OF HANDLING CHEESE.

That statement may seem incredible to those of you who have your minds fixed on the margin between primary prices in Canada and retail prices in England which prevailed in pre-war days, but the cost of handling dairy produce has advanced like everything else. I quote from a statement given out by the Department on July 30th last respecting the cheese purchase:

"The cost of handling the cheese from the time it is delivered by the Canadian producer at Montreal until it reaches the consumer in Great Britain at the present time amounts to 10.95 cents per pound, made up of the following items:

	Cents per Lb.
British retailers' profit (which includes loss in weight in cutting up)	5.
Commission paid to British wholesalers and British importers (average)	1.5
Inland transport in Great Britain	.5
Storage and handling in Great Britain	.5
Interest in carrying stock	.5
Loss in weight	.33
Ocean freight and landing charges	1.75
Discount	.25
Commission paid Montreal exporters	.37
Montreal handling charges	.25
Total	10.95

In addition to these charges the British Committee will have to bear the loss on account of the low rate of exchange, which at the present time is equivalent to about 2 cents per pound.

The British Committee will lose on the Canadian cheese purchased at 25 cents, and this loss will have to be met from the profits on purchases in other countries, or become a charge on the British Treasury."

No Fixing of Prices.

The offer of the committee to purchase cheese at 25 cents was held by some at the time as equivalent to "fixing" the price, and there was more or less resentment on that ground. That this was a mistaken view of the matter has been fully shown by the course of prices during the latter part of the season.

The price would have been a "fixed" one only if the cheese had been commandeered and export to other markets prohibited. The British authorities would have been glad to have had this done, but consent to such action was refused in Canada, and thus you were in a position to take advantage of the European demand which came back late in July, this time through our own Canadian exporters, and at a higher price than the Montreal committee was paying.

It may be news to some of you that the committee has not yet secured the full 20,000 tons covered by their first offer, and that not a single box of cheese has been offered to it since October 1st.

Now I do not want you to misinterpret this statement of fact as in any sense an attempt to justify the policy of the British authorities, or as an argument that the price of 25 cents was a fair one under the existing cost of production. That is another matter entirely. My object is simply to put the facts fairly and squarely before you in the hope that a full knowledge of the situation will tend to remove any misunderstanding or sense of unfair treatment. It is not in the interest of the dairying industry that you should be dissatisfied, or feel that you have not been getting a square deal. I might add that the Ministry of Food have stated definitely that rather than pay more than 25 cents they are prepared to do without the cheese, and we cannot question their right.

The speaker estimated the value of the milk produced in Canada during 1919 at about $250,000,000, of which about $65,000,000 will represent the export trade.

Mr. Ruddick also gave the total number of milch cows for Canada as 3,547,437 in 1919. The increase from 1914 to 1919 was 874,151. We export only about 25 per cent. of our total production, and it is the total production of milk which is the important thing.

The manufacture of butter, or cheese, or condensed milk, or any other product, is only a means to an end, that end being the best possible return for the milk produced. Where milk is diverted by higher prices from one branch of the industry to another, it is a serious matter for those who have money invested in the business which is being deserted, but these things are bound to occur in the evolution of any business, and cannot very well be avoided. You cannot prevent milk producers in this free country from taking advantage of the best available market.

There is one thing you may be sure of, and it is this: that as long as there is a demand for all these different articles there is no danger of any one of them being produced to the total exclusion of the others. The law of supply and demand will regulate that.

Proposal to Stop Export.

Some people would stop the export of dairy products in order to bring down the price of milk. Such a proceeding would be in the line of economic suicide for Canada and very unfair to the dairy industry, as there is no reason why it should be singled out for such treatment. This country must live by the export of agricultural produce.

We will have high prices as long as the present world's scarcity exists, and the scarcity will be relieved only as production overtakes consumption. High prices are necessary to stimulate production. Any action which would result in reducing prices would have the effect of decreasing production and therefore putting off the day when there will be a reasonable balance between supply and demand.

Following a review of the international situation, the speaker said: The situation in the United Kingdom is still causing the authorities much concern, and it is feared that there will be an actual milk famine during the present winter. The butter ration in England, which has been 1½ ounces per week for some time, was recently cut down to 1 ounce per week, the lowest it has been since the war broke out.

Perhaps we ought to take these facts into consideration before criticizing the policy of fixing prices, and the control of distribution, which has been adopted in the Old Country. We should consider the peculiar and dangerous situation which existed during the war, and which still exists, before blaming the authorities in this matter.

If the trade in dairy produce in the United Kingdom had been left uncontrolled, the limited supply would have given rise to much speculation, and retail prices would have been forced up to such a level as to be prohibitive for the working people, upon whom the supplies of munitions and other war materials depended. At the present time it is the coal supply which is causing anxiety.

The policy of control insures that every person, rich and poor alike, receives the same quantity, and while there is some grumbling, you can easily understand that those with limited means accept the situation much more cheerfully when they know that others able to pay any price are in exactly the same position as they are.

FORTUNATE POSITION OF CANADA.

Canadian Dairymen, while they have had their legitimate grievances and have suffered from a shortage of labor, have, after all, been in a very fortunate position compared with other overseas Dominions. The short ocean voyage has insured sufficient tonnage to carry all our products without delay.

In this respect New Zealand and Australia were greatly handicapped. At one time there was a year's output of cheese stored in New Zealand. Their surplus cheese is contracted for at 21½ cents and the butter at 38 cents, until August, 1920, and private shipment is not permitted. That is a real "fixed" price.

In conclusion, let me say that, as I see it, there is every reason to believe that the dairying industry will continue to be the most profitable branch of farming in eastern Canada. It is necessary that it should be the most profitable if there is to be continued expansion. It is the most exacting line of farm work that can be engaged in in this country. The production of milk has features which involve more or less hardship in many cases. If it were not so the business would soon be overdone.

Some time ago, when the price of cheese was going up and the committee were not receiving any cheese, I wrote and told them that if they wanted any more Canadian cheese this year, they would have to go into the market and buy them. The reply was that they were sorry they were not going to get any more Canadian cheese, but that they would not pay any more than 25c. That is their position, and they have a right to do as they like about it.

Mr. Ira Tennant: The British Government own the shipping space and there was no other way for us to ship. We were told by Mr. Publow last year that we had markets such as we never had before. I would like to know how it was that somebody could just press the latch and all these markets were shut off. I know that the need is great in England, and that we should play fair, but, on the other hand, I do not think it is a fair proposition for these men to tell us that we had access to the market when we did not have free access.

Mr. Ruddick: I think the gentleman has had quite a wrong impression. You have had access to the continent of Europe, all the cheese has been going there; there has not been a box offered to the Commission. There has been no trouble about shipping when you could make the financial arrangements.

Q.—Why was it these men could not get all the cheese they wanted?

Mr. Ruddick: Because you wanted a higher price, you got 27c. and up to 30c.

Mr. Wilson: The exporters purchased cheese at a higher price than 25c. the first part of August; were they not refused shipping space by the Government?

Mr. Ruddick: There was a scarcity of space, and other stuff was refused space.

Mr. Wilson: Was not the reason they were refused shipping space because the purchasers of this cheese had paid a higher price than the committee were willing to pay?

Mr. Ruddick: No, that was not the reason. I don't know anything about the committee's business, I had nothing to do with it.

Mr. Wilson: If the price had not been controlled it would not have gone as low as 23c.

Mr. Ruddick: The committee paid more for the cheese than they sold it for, they lost money on it.

Q.—Was the American cheese paid for on the same basis?

Mr. Ruddick: They did not buy any to speak of last year.

Q.—When the English purchasing committee came over here did they interview our Dairy Commissioner?

Mr. Ruddick: I met them. They came over here feeling that they were just coming here as ordinary buyers, and the only difference between their offer and any man making an offer on the Cheese Board was that they were buying a larger quantity. They did not feel that they had to consult anybody, they just came over as ordinary buyers to offer a price.

Q.—I understand they said on the Brockville Cheese Board that if the cheese was costing more than they were paying they would take the matter into consideration.

Mr. Ruddick: They may have said that.

ONTARIO BUTTER AS GOOD AS ANY.

Geo. H. Barr, Chief of the Dairy Division, Ottawa.

After referring to the excellence of the cheese exhibited and appealing for adequate salaries for the men who are making such fine goods, the speaker advocated a uniform type for butter throughout the Dominion.

If the butter business keeps on increasing as it has done the last four or five years, we will gradually have to export a great deal of butter, and the export market will be the one that we will have to cater to, and the man who knows how to make the finest export butter will be the man who will be in the forefront.

We feel that something might be done to bring the provinces a little closer together, in the manufacture of a uniform type of butter, and with that in view we started last year in the Dairy and Cold Storage Branch what we call a Dominion Educational Butter Scoring Contest. We gave each province the privilege of selecting four creameries which would manufacture and ship to Montreal during the months of May, June, July, August, September and October, one 14-lb. box of butter. All the provinces entered into this competition, British Columbia selecting three creameries and all the others four each. We received the samples at Montreal each month during the past summer. It has been said that as good butter could not be made in one province as another, but this contest has proven that that is wrong. The records go to show that just as good butter can be made in Ontario as in Alberta, and it is just a question of improving the general average and making the whole output of the Dominion equal to the best.

Mr. Barr then presented statistics covering the scorings of the year. These can be secured by applying to the Dairy Division, Department of Agriculture, Ottawa.

CO-OPERATIVE BUTTERMAKING.

PROF. H. H. DEAN, O.A.C., GUELPH.

Co-operative Buttermaking, or the Creamery Industry of Ontario, may be discussed from four viewpoints: (1) Its relation to farms and farming; (2) its relation to other branches of dairying; (3) to the Dairy Department, O. A. College; (4) to the Province as a whole.

RELATION OF CREAMERY TO FARMING.

Each and every branch of the dairy industry of Ontario bears a close and vital relation to the farms and farmers of this Province. Each also has some special or peculiar points in its relation to farming, which is not characteristic of other branches. For instance, the creamery has a special bearing on soil fertility and live-stock, in that no other branch or line of dairying is so well adapted for maintaining and increasing the fertility of soils, which is granted to be the most vital problem in farming. No other kind of dairying is so well suited for raising good live-stock, because skimmilk seems necessary for the young and growing animal, though men are now looking for a substitute, claiming that skimmilk and buttermilk are too valuable as human foods to allow of their being fed economically to the lower animals.

The use of artificial fertilizers is being advocated as a substitute for animal fertilizers, but experiments indicate that these are able to *supplement* only, not substitute for, the old reliable farmyard manure. It is altogether likely that farmers in Ontario will use more artificial fertilizers than has been the custom in the past, but no man can afford to do this who allows barnyard manure to waste, as is too frequently the case on Ontario farms.

In its relation to the farmer the creamery has several points of special interest, among which may be mentioned that of knowing the cows in each herd individually by weighing and testing the milk, so that the owner may know how much fat or butter each cow is producing, because the farmer is paid for fat only by the cream buyer, hence it is doubly necessary that the patron of a creamery should know how each cow's milk tests for milk-fat. The farmer in Ontario, as a rule, sells cream only to the creameryman, hence he must be familiar with cream separators and the necessity of keeping these clean; also he must know the importance of cooling cream immediately after separating, which involves the questions of ice-supply and cooling tanks, and there is no more important question in the whole creamery situation than at this point. We need a campaign for more ice and better cooling facilities on dairy farms where cream is sold for buttermaking purposes. Cream grading and discrimination in prices favoring good cream by three to five cents a pound fat, naturally follow.

The farmer is also interested in the transportation of his cream to market. How often should it be delivered, what should it cost, what is the best method—train, radial, truck, motor car, horse, or what? This leads us into the bigger questions of improved train service and better roads, which would take us too far afield to discuss at this time, but they are very important problems for dairy farmers to consider.

In a word, the creamery industry as it affects farmers depends for its continued prosperity upon good farms and good farming, good sweet cream, cheaply and efficiently transported from the farm to the creamery, a first-class quality of butter, marketed in the best possible way, and upon good prices and fair dealing between the co-operative creamery and the dairy farmer. Without these, co-operative buttermaking will not make the progress it ought in a progressive country. Now is a good time to take stock of the good and also of the inefficient branches of the business.

As it Affects Other Branches of Dairying.

Dairying is like a large tree growing in the fertile lands of the finest farming district in the world. Its roots are fed from stored-up material in our soil. It is watered by the most wonderful chain of lakes found anywhere. It has been fostered by public and private cultivation funds, but in spite of all this we have to admit that there are many "mouldering branches" and too many dead leaves. Why is this? The answer is found to some extent in the jealousy which exists among the branches, and the leaf selfishness which is all too apparent. All those who grow trees know that a certain amount of pruning is needed for the best results, but if we imagine a tree having branches which try to cut off any branches which grow faster than the majority, or whose shape those in greatest number do not approve; or one having leaves which are pulled off by other leaves because they are not the exact shape and color of those in largest numbers, we have a tree that is bound to be sickly and unprofitable. The tree is best whose roots, trunk, bark, branches and leaves all strive to produce the finest tree on the farm or in the plantation. So with the dairy industry, the roots on the farm must support and feed the trunk and branches which are the manufacturing and selling agencies; while the leaves, which are the cheese, butter, condensed and powder milk makers, should furnish the air or breath for the tree, and not be trying to pick each other off rival branches. This may seem more fancy than real, yet it is probably "a condition, not a theory."

Without going into details, to bring about this suggested improvement a provincial dairy council or association is needed, having branches or sections for all parts of the dairy industry. I am confident from what I know of the creamerymen of Ontario that they will support such an organization.

Relation to Dairy Department, O.A.C.

The chief business of the dairy department is to teach scientific and practical dairying to the students who attend the O.A.C. "The world belongs to him who knows most." The second duty, as relates to co-operative buttermaking, is to conduct investigations and report on same, with reference to the production and manufacture of fine creamery butter so far as time, funds and equipment will allow. A third duty is to meet with buttermakers and exchange ideas on buttermaking, at public gatherings such as the annual meeting of the Eastern Ontario Dairymen's Convention. At such times, the keynote should be inspiration to do better work during the coming year than has ever been done before—"stake-driving" is the newest name for such meetings.

Time will permit but brief reference to the second point only:

Butter.

The chief lines of investigation with reference to buttermaking in 1919, were: pasteurizing sour cream at temperatures of 140°, 150°, 160°, 170°, 180°F., with and without culture; also with and without adding lime neutralizer before pasteurization. Samples of all lots were sent to the Government Grading Station at Toronto, soon after making, where they were held until October 28th, when they were scored a second time, for flavor, by Mr. John Scott, who is in charge of the Grading Station.

The chief results obtained may be summarized briefly:

1. The higher the temperature used for heating the sour cream, the greater the loss of fat in the buttermilk, but this was lessened somewhat by reducing with lime the acidity to about .3 per cent. before heating.

2. The lots heated to 170°F. produced the best all-round butter, both when fresh and after being held in cold storage for two to six months.

3. Apparently there was no advantage in using eight per cent. culture (starter) as the averages of all scores for flavor were practically the same for the lots with and without culture, added for the purpose of ripening the cream.

4. There was little or no difference in the quality of the fresh butter whether lime neutralizer was or was not added to the cream before pasteurizing, but when held for some time in cold storage the neutralized lots were better in flavor and scored slightly higher in total points. These tests indicate that it may be advisable to reduce the acidity of very sour cream before pasteurizing, but it would seem as if the acidity should not be reduced below .3 per cent. otherwise curdling takes place when the cream is heated, causing excessive loss of fat in the buttermilk, and particles of curd in the butter which are very difficult to remove.

Tests were made on the effect of working butter more than usual. The results indicated that overworking butter seems to improve its keeping quality. Lots "underworked" lost two points in flavor when kept in cold storage for about three months, while lots of similar butter "overworked" lost but one point in flavor kept the same length of time and under similar conditions. The total points were also greater for the overworked lots, both when fresh and when held. The evidence points to the advisability of erring on the side of "overworking," especially for butter which is to be placed in cold storage.

Considerable trouble has been experienced by creamerymen during the past two seasons with butter which has two distinct colors in the box and sometimes in the prints of butter. Looking at the sample, one would judge that two lots of butter of different colors has been blended in the box or print. We had several lots of such butter in both 1918 and 1919. Some attribute this "two-color butter" to the type of churn used in working; others to the salt or method of salting. A number of tests made during the season of 1919 threw little or no light on the question and it, so far as we know, is still an unsolved problem in buttermaking. Some creamerymen report serious losses from this cause.

Comparative tests with magnesia lime and ordinary lime used as neutralizing agents in cream, were not in sufficient number to draw definite conclusions as to their relative values for this purpose. Both these "neutralizers" are used by buttermakers in creameries throughout the Province of Ontario.

Relation of Co-operative Buttermaking to the Province of Ontario.

If we take a wide-sweeping view of the relation of the creamery industry to the Province at large we notice some striking points:

1. The people at home want and are willing to pay for large quantities of good butter, in fact we are not able to meet the demand for fine, fresh butter, particularly in the winter time, when prices are exceptionally high. There is great need of development along the line of more and better winter-made goods. A special effort is needed to produce very much more butter than is being made at the present time. Too many of our creameries either close altogether when cold weather begins, or they run at half, or less, capacity. This is a phase of the creamery business which should receive the careful consideration of all those interested in the development of co-operative buttermaking. It involves more fresh winter cows, better buildings, so as to enable better control of temperatures, the use of pasteurizers, as it is almost impossible to make fine butter in winter out of raw cream, and a general all-round improvement in methods of manufacturing, as the once-a-week creamery is usually a poorly managed concern, turning out an indifferent quality of butter. There is great need of a "revival" among our winter creamerymen.

2. The Province should provide for more research work with reference to the fundamentals of buttermaking. I would suggest two lines as "starters":

(*a*) Breeding experiments in order to discover the laws, if there are such, which determine profitable and unprofitable cows. We know there are a great many unprofitable cows in the Province and a few profitable ones. Is it all "luck" or "chance" breeding dairy cows, or is there something which is reliable? It is useless to rail at the farmer who keeps poor cows, unless we can demonstrate to him how his stock can be improved at moderate cost. Someone says, "Use a pure-bred sire," "swat the scrub bull," etc.—all very good, but this does not altogether solve the problem, as a man has no guarantee that if he buys a pure-bred bull his stock will be improved enough to pay the extra expense. I am not throwing any bricks at the bure-bred bull, because I am a strong believer in this line of improvement, but the improvement is so mighty small in some cases, that one needs a microscope to see it in the herd, and the average farmer is "from Missouri." It may show in a few individuals, but what we need is something which gives a larger percentage of good cows than can be got by any known methods within the reach of the pocket-book of average farmers. "Line-breeding," "Inbreeding," "Cross-breeding"—what do we know about these with reference to dairy cattle, from reliable sources? Much that we read about these topics in books, is based on evidence that the thinking man cannot accept, without reservation and considerable scepticism.

(*b*) A chemical and bacteriological dairy laboratory should be established, preferably at the O.A.C., wherein trained men might carefully study the whole problem of the science of making fine butter and cheese. Briefly, instead of having so many men going to the creameries and cheeseries offering suggestions to the butter and cheese makers, which, in many cases, are not carried out, how would it do to take two representative factories in the Province where second grade butter or cheese is made, and have a thorough chemical and bacteriological analyses made of the raw material, water supply, machinery, methods, from beginning to end of the churning or cheesemaking process throughout one or more seasons. We should then be able to locate the causes of the trouble and suggest a remedy. It might be found in the creamery, for instance, that everything was all right up to the time of churning, but that after that the trouble began. Here is something definite, probably due to a defective churn, or lack of proper cleansing. Some work along this line was done at the Dairy Department of the O. A. College during the season of 1919, but had to be dropped for lack of funds and men to continue the work.

One other point may be mentioned, though many others suggest themselves as being of Province-wide interest, and this third point is that of the need of good butter in fairly large quantities, in order to develop and maintain an aggressive, prepotent race of people in the Empire-Province of Canada. Poor butter means that our people will be driven to buy butters of the "peanut," "vegetable," and "oleo" varieties, which will sap the vitality in a nation. Can we afford to run this risk? *No*—ten times *no!* The Province, State, Government, call it what you will, must provide the inspiration and the funds to make the creamery industry one of the most important lines of agriculture in the Province of Ontario:

> "Ill fares the land, to hastening ills a prey,
> Where wealth accumulates and men decay."

is as true to-day as when the words were written many years ago, by Goldsmith, the gentle poet-philosopher.

Need I say more in order to make you realize what an important bearing co-operative buttermaking has, and will have, in the development of the people who live in the finest agricultural country known to civilized man and which is bounded on practically all sides by inland seas, without which, in some form, no nation has become great, or maintained its greatness for any length of time.

MR. L. A. ZUFELT gave instruction to the forty-six creameries of Eastern Ontario, devoting most of his time until the middle of July to those creameries which were equipped with modern machinery and showed a desire to improve, believing that this method would produce results much more quickly and satisfactorily.

Much of the work which I have done among the creameries during the past five years is only now beginning to bear fruit, as our entire method of butter manufacture has had to be revolutionized. One of the chief drawbacks to rapid advancement in the quality of Eastern Ontario creamery butter has been the lack of up-to-date machinery. This, I am glad to report, is gradually being overcome, as at present twenty-nine creameries have installed modern pasteurizers, fifteen of which endeavor to pasteurize all the cream received, whilst the other fourteen pasteurize only during the spring and fall.

The benefits of the one-week's Short Course held at the Eastern Dairy School and the instruction in the creameries during the manufacturing season were emphasized in the general improvement in the quality and the awards at the exhibitions at Toronto, London and Ottawa, where Ontario took three out of eight first prizes.

One of the strong features in the instruction work in Eastern Ontario, and one that has contributed not a little to our success this year, is the creamery run in connection with the School and the valuable assistance rendered by Mr. J. A. Craig, our buttermaker. We have been able to obtain information at first hand and try out any new ideas in the method of manufacture, which enables us to give the creamerymen information that is absolutely reliable. This has created a confidence in our work, the value of which can hardly be estimated.

In order to make any lasting improvement in the quality of Ontario creamery butter the butter must be graded and sold on its merits. It costs money to make a good quality of butter, and unless our creamerymen can be assured of getting more money for a higher quality, we will be a long, long time persuading them to make the better article which costs them more money to manufacture. We simply get what we pay for. If we are not willing to pay a higher price for the better grades we will never get them, at least not in such quantities as to make us feel proud of the achievement.

Mr. A. A. Ayer, of Montreal, one of the leading exporters of Canadian cheese and butter, expressed the hope that Canada would continue to lead the world in the quality of its export dairy goods. Mr. Ayer predicted a continued demand for all kinds of Canadian products at higher prices than in the years before the war. The speaker referred to the depreciated currency and the rates of exchange, and stated that not only these complications of payment but many other difficulties require to be overcome in selling cheese and butter, such as exporters of grain have so seriously to contend with.

Under ordinary conditions, the selling price of everything depends, first, on the quality produced and, second, on the market for it.

Along with economy, every farmer should work and plan to increase the quantity of all farm and dairy products, and so maintain our good name, and while supplying Canada with food, not only help to supply Great Britain, but the Continent of Europe, which is hungry for all kinds of food, especially for our butter, cheese and meat, and they will be until they can raise hogs, cattle and milk cows.

Economy and larger production are the world's greatest needs to-day. Now is the time to make improvements on your farms and to find the way to increase production, so that your income will continue to be large when prices decline.

Great business firms and corporations are gradually giving some kind of an interest or reward to their employees, who help in any way to make the business profitable or successful. The success of every business depends mostly on the quantity produced or handled. The leaders of the working men have failed, in most cases, to see, or do not want to see, that greater production is the true way to assure an increase in wages and that the only fair way is for every man to be paid according to what he does, and the way to earn more is to work more hours per day.

DIRECTORS' REPORT.

PRESENTED BY MR. T. A. THOMPSON, SECRETARY.

This report reviewed the prices paid during the season and referred to the efforts of the Association for the past forty years of its existence to place the dairy industry of Eastern Ontario upon a higher level.

While we sometimes feel that we are progressing very slowly, yet when we review the conditions of the early days of this Association and compare them with the present, we are free to admit that very substantial progress has been made.

The Eastern section of our Province is perhaps better adapted for dairying than for any other branch of agriculture, and the fathers of the dairy industry recognized this fact, and spared no effort to develop the dairy business along every line.

The District dairy meetings which we hold annually in each county, have been the means of disseminating much useful information among the dairy farmers, along the lines of feeding and breeding their dairy herds, with the result that each year sees an improvement in the quality of the average dairy herd, and a decided increase in the average production per cow.

It is also gratifying to know that year by year the quality of our dairy products is improving until many of the cheese shown at our annual dairy exhibits have scored almost perfect, and much of the credit of this is due to Mr. G. G. Publow and his efficient staff of instructors.

We wish to call the attention of the dairymen present, to the small salaries of the average cheese and butter makers in Eastern Ontario, and if this custom is permitted to exist the best men will be driven out of the business. Our makers should be provided with much better homes than they have at present, and their salaries should be such that good men will make it their life business and be able to raise and educate their families as befits a good citizen of the country.

The war has been a great stimulus to the dairy industry. Never before have the products of our dairy farms been brought into such prominence, and the nutritious value of milk and milk products as a human food been placed so prominently before the people of the civilized world.

In the past we have devoted our attention to the export markets as an outlet for our surplus products, to the neglect of our home market. Particularly is this true regarding cheese. Our Canadian people would be better nourished, and have healthier bodies, if they would consume ten times the cheese that they are doing at present, and less meat.

No effort should be spared to encourage the consumption of milk and milk products among our own people.

Tampering with milk at the farms by watering, skimming, and keeping back strippings does not seem to be decreasing, and some more stringent methods will have to be adopted if we wish to successfully stamp out this pernicious habit. During the past season the fines collected by this Association for tampering with milk delivered to cheese factories in Eastern Ontario, amounted to $2,000, and only the most flagrant cases have been detected.

One farmer admitted having put enough water in his milk to bring him $350, and another $550 this season, and yet these men were fined only $50 each.

Another man was fined $50 twice inside of a period of two weeks. The fines imposed are altogether inadequate to cope with the seriousness of the situation, and the dairymen would do well to take into serious consideration the proposition brought prominently before this Association on several occasions, that of paying for milk delivered to cheese factories *by the Butter Fat Test.*

This Association is grateful indeed for the assistance it has always received from the Dominion, and also from the Provincial Government, which assistance has made it possible for the Association to accomplish the splendid work that it has during the past forty years. At the present time there is no branch of Agriculture that presents as bright a future as dairying.

The prizes were presented by GEO. A. PUTNAM, Director of Dairying.

SENATOR WEBSTER, of Brockville, outlined very forcibly the part that Canada played in the war, and stated that her future depends upon the development of our natural resources.

DR. G. C. CREELMAN, of the Agricultural College, in referring to the national debt and the part agriculture must take in meeting the financial responsibilities of the future expressed the view that: Farmers and public safety demand a higher regard for the affairs and necessities of the country, the farmer and the farmer's family. For lack of experience he has not hitherto counted in the management of the country's affairs. Nobody has ever doubted, and nobody has ever dared to say that the farmer was not wise in council, but at the same time he has not been consulted. The farmer has been regarded as the source of cheap food, of cheap labor, and as a source or raw material for commerce and manufacturing, and to keep the balance of trade on the right side of the ledger. After the armistice we expected that a revival in agriculture would come, that hired help would be very plentiful, that new land laws would be enacted and that new agricultural policies would be in every one's mouth. In looking up the daily papers of our great city within the last three days I found that two of them had the following editorials "Trade Routes," "Raw Material," "Public Ownership," "Capital vs. Labor," "Eight Hour Day," "Strikes," "Extended Trade," "Excess Profits," "Woman's Suffrage," "Minimum Wage," "Time and Half For Overtime," and "Street Car Franchise"; but not one word about the basic industry of this country, as we would expect at this time of our reconstruction, and when we are expected to pay the national debt. No wonder the farmers have turned in their wrath. The speaker then stated that the dairy farmers were making profits which represented 30 cents an hour for their labor, while plumbers were getting $1 an hour and railway employees $165 per month. If the farmers were to pay such prices milk would have to sell at nearly $1 instead of at the present price.

The foreign emigrant who has no interest in Canada and who works with the pick and shovel is making more money to-day, working for the railways, than is the average farmer on his own farm. In addition to that his children must work for him for nothing in order that they may all exist. City people say, "There are some farmers making money"! I say, "Yes, there are exceptions" and I analyze them under four heads: Those who have specialized in large farms, men who are capable of managing big affairs, and who have money. I know some of these men who have made a $1,000 an acre out of tobacco this year, and some men have made $500 an acre out of flax and the same off an acre of peaches. But these don't represent the great body of farmers.

The second class are those who have inherited farms already paid for; that man can go on and make a little extra money for himself. The fourth class are not numerous in this Province, but are found in the provinces to the west, where the land costs them very little, and where they have taken from the virgin soil large crops, and have then sold it and moved away. These four classes are a very small part of the community. The time was in this province when it was the pride of a man and his ambition to work hard and slave to make a home for himself and his family; but we must now count the income, not in terms of making a home, but in the terms of cash. The city man say, "If he is not making money why does he not quit." That is what he is doing in many places, and who is going to take his place? There are only two alternatives: either the farmer must be paid such a price that he can have a larger income, or he will quit. It must be made easier for the farmer who wants to continue on and do business to get money from the bank. The time is coming, and it has been a long time in coming, when the farmer can get money at a low rate of interest to make improvements on his farm. To sum up the national policy in agriculture I would say first, Government help for continuation schools; second, the public recognition of the farmer as a capitalist; thirdly, he must be recognized as a typical citizen, entitled to such pay as is commensurate with his labor, his investment and his ability to manage.

Fourth, assurance of an income, not by price fixing, but by conference of the producer, the distributer and the consumer. Why cannot these people get together. I believe our citizens would pay just what an article was worth if it was brought before them in a proper way.

Then, in the fifth place, we ought to have public funds to assist worthy farmers to get started.

In the sixth place, I want to see a national policy which would include loans on land for permanent improvements.

In the seventh place, I would like to see all the means that you and I and everybody can suggest to keep on the land those young men who know how best to deal with it and who love it, rather than encourage emigrants to come in from Europe.

Let us get a national policy in agriculture that will do for the farmer what the old national policy did for the manufacturer.

The Convention then adjourned.

RESOLUTIONS.

The following resolutions were presented and adopted:

That in order to make this Association of greater benefit to the dairymen of Eastern Ontario, and believing that the usefulness of this Association is imperilled by other organizations, be it resolved that the Executive Committee be authorized and urged to take immediate action in regard to any question that may affect the trade or interest of dairymen as a body, or of any particular district, and that the Directors be empowered to bring before the Executive such questions.

That the dairymen of Eastern Ontario, assembled in Annual Convention, do memorialize the Federal and Provincial Departments of Agriculture to take immediate action, either by educational or other means, to eliminate the Scrub Bull, and we pledge the assistance of this Association in the work.

That we memorialize the Federal Government to oppose with its fullest power the fixing of prices of any dairy products, and to secure the open market for the same; and that the finding of the Board of Commerce appear to us to have been unfair to the milk producers and we would ask that copies of this resolution and others bearing upon the activities of the Departments of Agriculture be forwarded to the different Ministers of Agriculture.

Whereas, the justice and desirability of purchasing milk for manufacturing purposes on a butter fat basis has been magnified with increased prices for dairy products. And whereas, purchased on a butter fat basis will result in improved quality, be it therefore resolved that the Provincial Government be asked to consider, in consultation with all interests concerned, the advisability of making operative the Dairy Standards Act as it now stands, or with desirable amendments, not later than the spring of 1921, and that full announcements as to the Act and the method of making it operative be made at the earliest date possible, so that owners, makers, and producers may make the necessary preparations. That the thanks of the Association be tendered to the Departments of Agriculture for their financial sympathetic assistance during the past year.

That the thanks of this Association be tendered to the President for the genial manner and untiring efforts he has shown while presiding over this Association for the past two years.

That the thanks of this Association be tendered the speakers and entertainers who contributed to the success of this Convention, and that all addresses be printed in the Annual Report.

Resolved, that the thanks of the Eastern Ontario Dairymen's Association be tendered the Mayor and Council and Citizens of the Town of Brockville, and to all others who contributed financially or socially towards making this Convention so decided a success.

Moved by MR. ALEX. HUME, M.L.A., and seconded by MR. D. MUIRHEAD, that the above resolutions be adopted. Carried.

Moved by MR. GILLESPIE and seconded by MR. BENSON, that Mr. M Braid be appointed auditor. Carried.

Dairymen's Association of Western Ontario

The Fifty-third Annual Convention of the Dairymen's Association of Western Ontario was held at London on Wednesday and Thursday, January 14th and 15th, 1920.

PRESIDENT'S ADDRESS.

FRANK BOYES, DORCHESTER.

As President, it gives me pleasure to welcome you to this the fifty-third Annual Convention of the Dairymen's Association of Western Ontario in the City of London.

While it is a pleasure to welcome you to this Convention I am sure I express the feelings of all present when I say that we all sincerely regret the death, since we last met, of one of our Directors, Mr. Geo. E. Booth. His absence has already been felt and we shall miss him very much at this Convention.

The City of London, being located in the good dairy county of Middlesex, and centrally located in Western Ontario, has been chosen by your Directors as a place of meeting for the second time in succession.

It is not too much to say that the London district has been and is an important section and a factor in winning and maintaining the proud position our dairy products occupy in the markets of the world. Our Association has always had the loyal support and influence of some of the best citizens of this city, and I venture to express the hope that our meeting will be of mutual benefit to the citizens, to the Association and to the dairy industry as a whole.

It was in the Town of Ingersoll in the year 1867 that the first meeting of this Association was held.

Those present at that time probably did not realize the importance of the work which they were then doing, but results have shown that they had a vision; they saw the possibility in this Province and in the Dominion for a wonderful growth of the dairy business.

Every country in the world laying claim to progressive civilization has adopted to a greater or lesser extent the fundamental principles of dairying in some form as a basis for maintaining soil fertility and thus assisting productive agricultural operations.

Provincial and Federal Governments have wisely assisted the dairy industry and have done everything possible to help build up this branch of Canadian agriculture, in which millions of dollars are invested and which yields annually, to the prosperity of the country to the extent of over one hundred million dollars for manufactured dairy products alone.

In this connection it might be interesting to point out that the two provinces of Ontario and Quebec produced in 1918 97 per cent. of the cheese, 70 per cent. of the total creamery butter and probably 85 per cent. of the total amount of condensed and powdered milk produced in the Dominion of Canada.

War conditions have stimulated the export trade in dairy products beyond expectations. The scarcity of dairy products throughout the world and the consequent demand has advanced prices to a point never before realized.

While prices of dairy products are high, yet when we consider the high cost of feed, labor and other items which enter into the cost of production, the producer is certainly not receiving too high a price for his dairy products.

The population of our cities and towns is growing and requires greater quantities of milk and cream; the milk condenseries, milk powder factories and city milk supply plants are branching out and securing control of some of the cheese factories in certain localities and are paying good prices for milk. A large quantity of cheese is being manufactured, and we believe this good old industry should receive every encouragement and support, that the quality may be the finest, and therefore maintain its good record in the old countries, and continued good prices will be the result.

The number of creameries have increased and the price of butter has been very high in spite of the competition of oleomargarine and other butter imitations. We believe the good thinking people of Canada would prefer to pay double the price for good butter over that of butter substitutes.

Quite a large quantity of whey butter has been produced this season and has brought good prices.

In the fall of 1918 the National Dairy Council of Canada was formed at Ottawa by representatives of all branches of the dairy industry from all over the Dominion. The Directors of this Association appointed Mr. Geo. Medd and myself as representatives on the Board of the Council for 1919.

Having been the only cheese manufacturer on the Executive Committee of the Council, I felt that a great responsibility rested upon me and have been trying to do my duty to the cheese industry. The President of the Council, Mr. Stonehouse, will, in his address, no doubt explain the benefits to be expected from a Dominion Organization of this kind.

I am fully in accord with the programme laid down, and recommend all to give it their support and financial assistance. I wish to extend the thanks of the Dairymen's Association to the chief dairy instructor and his staff for their valuable assistance to the different branches of the dairy industry, and also wish to thank both the Federal and Provincial Departments of Agriculture for their extensive assistance.

I wish to take this opportunity of congratulating the milk and cream producers in furnishing the high grade raw material which enabled the manufacturers of dairy products to bring together such a magnificent display as is exhibited at this Convention, and I also wish to congratulate the makers upon the excellent manner in which their products are finished and the trouble they have gone to to make this Exhibition one of the finest we have yet had and hope they will feel so encouraged that they will go home with a determination to make next year's exhibit still better.

On behalf of the Association, I wish to thank all those who have contributed to our prize list, and also the Canadian Salt Co., of Windsor, for the very handsome badges furnished by them for the members and officers of this Association.

In conclusion, allow me to express the hope that you will continue to produce and manufacture a quality of dairy products second to none manufactured elsewhere in the world.

DIRECTORS' REPORT, 1919.

The season opened with cold rainy weather, which delayed seeding operations and kept some of the country roads for a time in a condition that increased the difficulties of milk hauling. Wheat and pasture grass came along well, and by the middle of May most of the cows were out of the stables. About May 26th warm, dry weather set in and continued for several weeks. This climatic change allowed seeding and root planting to proceed, and about June 1st conditions were much improved. The wheat and corn crops were in most localities very fair but coarse grain crops were generally short. Taking the season as a whole conditions for summer milk production were fair, but labor shortage on the farms, together with high priced mill feeds and concentrates, are factors affecting the cost of winter milk production, creating a very difficult situation for producers.

Cheese and Butter Prices. Cheese prices advanced about May 1st, declined again in July and increased early in September, reaching during the latter part of the season a point about equal to the first half.

Exchange rates became a disturbing factor. In July representatives of the British Ministry of Food offered 25c. per pound, f.o.b. Montreal, for twenty thousand tons of Canadian cheese. So far as we know all Western Ontario cheese were sold at a higher price than that quoted.

In March the price of butter declined, owing chiefly to the uncertainty of the future, but immediately an exportable outlet was assured the price advanced, reaching during the fall months the highest level yet known in the trade. Indications point to a future export trade in Canadian butter and warns us to exercise every precaution, through advanced methods, to manufacture only a high grade, standardized product.

Cheese and Butter Prizes. Our cheesemakers are again to be congratulated upon the number of prizes won at the Canadian National and other exhibitions. The silver cup for highest scoring cheese was won by H. E. Donnelly, Straffordville. Our buttermakers also made a much better showing than in some previous years and a creditable number of prizes for creamery butter was secured, although the first prizes went to other sections. This year, however, we trust that the creamery men will make a special effort to exhibit butter at these various exhibitions as they probably have not fully realized the importance of exhibiting and winning prizes and the relation of such prize winning to the general sentiment in regard to quality.

Milk Markets. In 1918 Western Ontario produced nearly 20 million pounds of factory cheese, 24 million pounds of creamery butter, and 196 million pounds of milk were utilized in the condensed, powdered milk and market milk industries; in addition, milk for towns and cities, cream for ice cream trade and farm dairy butter must be considered and of which no statistics are available.

The total value of cheese, creamery butter and milk for condensed and powdered milk was $19,700,000. The value for 1919 will, of course, be greater as the average price was higher than in 1918.

Several factories in the southern section have changed from cheese making to creamery butter and milk powder production. Such changes, of course, mean less cheese production in that locality.

It is interesting to note the variation in the output in Western Ontario from year to year of the different dairy products. These yearly variations of quantity depend chiefly upon (*a*) climatic conditions and the greater or less demand for certain milk products; (*b*) the cost of production and price received; (*c*) value of by-products.

With a greater knowledge of the economic food value of dairy products as compared with other foods, consumption will certainly increase. Studying the situation as it develops from year to year it would seem that when the demand for one type of dairy product creates an advance in price over some other product, the time arrives when the particular demand is met, with a corresponding rise in price for the other dairy product, the output of which was decreased. In the last analysis, the summer price for dairy products in Canada is for some years to come likely to be controlled, to a certain extent, by the price of our exportable surplus although at certain seasons of the year local demand controls the situation.

The valuable by-products from the cheese and buttermaking industry encourage the raising of live stock as these by-products are at present among the cheapest and best foods for young stock and are of immense importance in economic production.

THE EDUCATIONAL DAIRY EXHIBIT AT THE CANADIAN NATIONAL. We wish to make special mention of the exhibit of dairy products in the refrigerated space provided in the Dairy Building at the Toronto Fair. This exhibit placed by the Provincial Dairy Branch, was very favorably commented upon and was, we believe, the means of bringing more fully to the attention of consumers the importance of dairy products as a food. In previous years such an exhibit could not be shown owing to the lack of cooled space in which to make the display. Future exhibits of this type should be a valuable illustration of the importance of co-operation of the various dairy interests in placing dairy products attractively before the public and also prove of immense educational value.

MEMBERSHIP. Your Association has a membership of 276. Subscription to *Farm & Dairy* is included in the membership fee of $1.00.

SPECIAL OFFICER. A special officer was again employed to deal with cases of milk deterioration. Eighteen persons pleaded guilty to delivering deteriorated milk to the factories, and magistrates imposed fines of from $10 to $100.

INSTRUCTION WORK. This work is based on the sound principles of "show how," and a report will be submitted by the chief instructor. The butter grading service was continued and a report will also be submitted.

We respectfully recommend that the Provincial Dairy Branch, in addition to the work mentioned, provide means of inspection and instruction for cream buying stations and other places where dairy products are handled and not receiving this assistance. In this connection the checking up of the testing of milk and cream where payment is made by the test should, we believe, be especially considered.

LEGISLATION. The Provincial Legislature passed an Act at the last session dealing with the purchase of cream. The Act allows special regulations to be adopted for successful operation and provides for the correct reading of tests, the weighing of cream samples, etc.

SPEAKERS FOR ANNUAL MEETINGS. The Dairy Branch of the Ontario Department of Agriculture again provided speakers for meetings of patrons of cheese factories, creameries, milk powder plants, etc. This work is much appreciated and we trust will be continued during the present winter as the educational value of these meetings is of special importance in improving the quality of raw material and getting closer co-operation between the producer and maker.

THE DAIRY EXHIBITION. Until recent years the cheese and butter industry covered most of the output of manufactured products and naturally the activities of this organization were chiefly devoted to the advancement of these branches. Changing conditions, however, have increased the output of other milk products and these should be given their proper place in this exhibition. The aim is to build up an exhibition in connection with the Convention that will be educational and of interest to not only producing and manufacturing dairymen but to consumers as well. This is a special method of advertising to the general public the importance and food value of milk and its products and the necessity of the dairy industry in the life of the nation. An increase in the consumption of dairy products, irrespective of what the price may be, would go a long way towards better health for each individual, whether children or adults. It has been truly said that "the dairy cow is the foster mother of the world." We wish to point out the opportunity for expansion and therefore urge every one to forget their prejudices, if there are any, and co-operate in making the dairy exhibition an outstanding feature of dairy educational work in this part of the Province. The Exhibition offers an opportunity to study and compare the best type of dairy products. It is educational in a practical way. Without such an opportunity for comparison one is apt to overrate his own success and become self-satisfied, which is detrimental to progress. Many improvements in quality have been brought about by the impetus received at this Convention. No one can attend and listen to the various discussions without going home determined to do better work, and the meeting together once a year of those directly interested is also a big factor in continued progress.

NATIONAL DAIRY COUNCIL. In further reference to the National Dairy Council, the formation of which was mentioned in our last report, we may state that a progressive programme has been outlined which we respectfully endorse and express a desire on the part of this Association to assist in any way possible to make the work of the Council a success.

RAILWAY RATES. If some other Organizations could meet during the same week as this Convention, we would be in a position to take advantage of reduced railway rates on the certificate plan which may be offered by the Canadian Passengers' Association.

BOARD MEETINGS. Last year was the first time the Convention was held in London for a period of twelve years, and your Directors felt justified, when the city so generously offered this excellent Hall a second time, in taking advantage of the offer and holding the fifty-third Convention here. Your directors have endeavored to carry on the business of the Association to the best of their ability. We wish to express our appreciation of the excellent work done by both the Federal and Provincial Departments of Agriculture in connection with the advancement of the dairy industry.

THE CO-OPERATIVE DAIRY COMPANY. Further progress has, we understand, been made in the organization of this Co-operative Company, which is to take in the factories of the Counties of Peterboro. Hastings and Prince Edward, and no doubt some additional information will be given should the matter come up for discussion at this Convention.

GENERAL. Indications point to a period of good prices and a continued export demand for dairy products and the future of the dairy industry looks bright. We must, however, keep before us the question of quality improvement and continue in the future, as in the past, to work for high grade products. The production and manufacture of dairy products is a specialized technical branch of agriculture and every year brings up new problems. Changing conditions must be met and every effort made to make use of the assistance which science may offer to improve our methods. It has been said that high prices tend towards lackness in quality, but dairymen cannot afford to take any chances on this point. A good "reputation" is too valuable an asset to endanger by any uncertain methods. Let us do our utmost this year to see that all our products are "first grade" and thus assist in placing the industry on a sound basis.

It is with the most sincere regret that we record the death of the late Geo. E. Booth, of Ingersoll, which occurred on April 3rd last. He will be missed by his many friends in the dairy business and at this Convention. A resolution of condolence was at the time of his death forwarded to his family.

FINANCIAL STATEMENT.

Moved by MR. W. G. MEDD, seconded by MR. J. SCOTT, that the Financial Statement and Directors' Report be accepted as read. Carried.

THE SCRUB DAIRY SIRE.

PROF. WADE TOOLE, O.A.C., GUELPH.

Before commencing to solve a problem it is necessary to have a fairly clear idea of what that problem is. When we start to discuss "The Scrub Sire" we at once admit that he exists and those of us having a knowledge of conditions in the Province know that scrub sires are all too plentiful in both beef and dairy herds in Ontario for the welfare of the live stock industry.

Last summer the Agricultural Representatives in the Province were asked by the Department to get the figures showing the percentage of pure-bred and grade or scrub bulls used in their respective counties. One can readily realize that this is a rather difficult proposition. The man with a pure-bred sire is generally more or less proud of the fact and is far more likely to report than is the owner of an inferior grade or scrub sire. It would be quite reasonable to believe that the percentage of inferior sires is far larger than the figures show. However, the results of the census give us food for thought. We often pride ourselves in Ontario, on being a great live stock Province and rightly so, but there is a long way to go yet before we reach that degree of perfection which all good live stock breeders would like to see attained, viz: nothing but high-class pure-bred sires used in breeding herds of the Province. I say high-class advisedly, for I deem it just as important that the scrub pure-bred bull be subject to the process of elimination as it is that the grade sire go. Sires which are culls in individuality are not a safe proposition whether they be pure-bred or grade. On the other hand, sires that do not carry good blood lines are not the safest to use however closely they may approach the ideal type of the breed they represent.

The census already referred to covered thirty-eight counties, and while all keepers of bulls did not report the figures are significant. The following table gives some idea of how the Province stands in breeding bulls.

No. of Farmers Keeping Bulls	No. of Pure-Bred Bulls	No. of Grade Bulls	Percentage of Grades or Scrubs
18,638	10,654	9,293	46.6%

As this is a convention of dairymen naturally you are more interested in the results of the census as they apply to the three specialized dairy breeds. It is found, as those who understand the situation would expect, that the percentage of grade bulls used runs much higher in dairy herds than in beef herds. The figures, however, give us reason to do some careful thinking. The following table shows the numbers of grade and pure-bred sires reported as used in the three dairy breeds.

Holstein		Ayrshire		Jersey		Total Pure-bred	Total Grade	Percentage Grade
Pure-bred	Grade	Pure-bred	Grade	Pure-bred	Grade			
3,724	5,440	323	435	252	78	4,299	5,953	58

These figures may not be complete. In fact, some later returns, not yet compiled, will doubtless make some difference, but they serve to show that there is a rather large percentage of grade and scrub bulls, and that these are more numerous among the dairy breeds than in the beef breeds. There is a reason for this. A considerable percentage of dairymen produce milk for the whole-milk trade. They do not raise their calves and maintain their cows only for the milk which they get from them. By not raising calves they have more milk to sell and are able to keep a few more cows on their farms than if they were bringing on young stock. They claim that all they are interested in, so far as the bull is concerned, is that he be sure. All they want is to get the cows in calf so that they will be regularly commencing new lactation periods. The bull is used simply as a stimulant to milk production. There are those, too, who claim, perhaps not without some reason, that they are more successful in getting their cows with calf when a grade or scrubby bull is used than when a pure-bred sire is kept, and also that they have less trouble with cows giving birth to over-sized calves and so increasing parturition troubles. Personally, I believe that a good deal of this is imagination and not based on facts, for rarely have these men used the right kind of pure-bred sires, and, to show that there is a difference of opinion, some dairymen in the old land who cater to the whole milk trade claim to use a grade bull because they say he gets larger calves which bring them more money when sold as soon as dropped than will the progeny of pure-bred sires. One thing is certain, all these men, when they go out to buy cows to replace their herds, desire to get matrons which are sired by pure-bred bulls with some milk behind them, and this is the crux of the entire problem. The small breeder must produce good cows if he wishes to sell to the big producer of whole-milk at a profit.

It is a fact, too, that a large number of small dairy farmers who raise their calves, are using grade or inferior sires. There seems to be little excuse why they should. Good pure-bred dairy bull calves are not selling at such a high price that the man with a good herd of grade dairy cows cannot afford to buy. Only the other day a dairyman who keeps pure-breds and sells whole-milk told me that he had just offered three pure-bred bull calves about a week old and from a good sire and out of high-producing dams for $10 each, and at sales of dairy cattle, young bulls, calves backed by very fancy milk records go at comparatively reasonable prices. In face of this fact the man with a grade dairy herd who plans to raise his good heifer calves for cows, either for his own herd or for sale for milk production, cannot afford to waste time with a grade bull. And, to my mind, a considerable percentage of those who are selling whole-milk and yearly buying cows to keep up their production could raise a few heifers more economically than they can buy them. If a good pure-bred bull were used in such herds generation after generation there is no possibility of a doubt but that the quality and production of the herds would improve. Suppose a man is on a hundred-acre farm and is keeping twenty cows, selling milk and raising no calves. Suppose he turns off three or four cows each year for some reason. Could he not, to good advantage, keep three or four heifer calves from his best cows to replace them. All he would have to raise would be about three of his choicest calves each year. The other heifers, if good, might be sold to other dairymen as calves to raise for milk cows and the inferior heifer and bull calves could go, as now, for veal. This could be done if a really good pure-bred bull were used and the milk producer would find that it was easier to raise a few good heifers than it is, right now, to go out and buy high-producing cows, for the seller rarely cares to part with his best cows unless he gets a very high price.

Breeding up is certainly the safest policy for the greater number of dairy farmers. We can make this statement without fear of contradiction. During the past seven years considerable work along this line has been done by the Central Experimental Farms situated in all provinces of the Dominion. Ordinary good grade cows were purchased for a number of the stations and a good pure-bred bull has been used on them. Heifers from these matings have produced on the average as much milk in their two-year-old form as their dams did at maturity, and as three-year-olds 33 per cent. more than their dams at maturity. Mr. E. S. Archibald informs me that the results with the next generation promise to be even more striking.

And then there are the results of the survey work carried on by Prof. A. Leitch, which go to prove conclusively that the right kind of pure-bred sire is the greatest single factor in the increase of milk production so far as breeding is concerned. It might be well to quote again, lest some may not have seen them, the figures for the Oxford County survey and also those for Dundas County.

How the Pure-Bred Sire Pays in Western Ontario.*

—	No. of Farms	Receipts per Cow	Feed per Cow	Profit over Feed
Grade Sire	140	$84	$65	$19
Pure-bred Sire under 5 years	31	116	70	46
Pure-bred Sire 5 to 10 years	62	123	72	51
Pure-bred Sire over 10 years	69	129	72	57

*Figures from the first Oxford County Survey.

Where the grade sire was used on 140 farms the profit per cow over feed was only $19. Better results were immediately noticeable where the pure-bred sire was used, and in those herds where the breeder had used a pure-bred sire for over ten years the profit per cow was $57 or just three times the amount of profit per cow in the herds headed by a grade sire. If the average of the grades was $19 profit what would be the results in those herds where real scrubs were used? These are the results under average dairy farm conditions in Oxford County. They are sufficient to condemn the grade or scrub sire as an inexcusable outlaw in the dairy herd. And the same conditions were found in Eastern Ontario under a similar survey.

The Case Against the Grade Sire in Eastern Ontario.

—	No. of Farms	Milk sold per Cow	Feed per Cow	Profit over Feed
Grade Sire	148	$86	$64	$22
Pure-bred Sire, under 5 years	47	102	66	36
Pure-bred Sire, 5–10 years	44	107	65	42
Pure-bred Sire, over 10 years	39	111	68	43

These Dundas County herds showed double the profit per cow where a pure-bred bull was used for upwards of ten years as compared with the ordinary grade. In Oxford County the farmer who steadily used a pure-bred sire had a total increase in receipts over the man who kept a grade sire of $45 per cow and a total profit over feed of $57 per cow or three times as much profit as the owner of the grade sire got per cow. It is shown in both tables that the feed costs were approximately the same in all classes, and again in Dundas County the man who had used the pure-bred sire for some years got twice as much profit per cow over feed consumed as compared with the man who still stuck to grades. Surely this is sufficient evidence to condemn the grade sire and yet, as the figures show, a large percentage of grade sires are still used even in the best dairy districts. All told, 580 dairy farms were visited in the two surveys from which the foregoing tables were compiled, and it will be noted that on 288, or nearly 50 per cent., grade sires were used. There is room for a vigorous campaign against the grade and scrub sire in all breeds and classes of cattle. The surveys referred to showed conclusively that the greatest opportunity for increasing the profits from the farm lies in increasing the returns from live stock and that the quickest, surest and best way to accomplish this is by practising better breeding methods. Pure-bred sires produce the cows that fill the pail at a profit.

We might cite specific cases of men who have started at the bottom with grade bulls and gone to the top after using pure-bred sires. A Waterloo County farmer commenced with low grades which gave 3,600 lbs. of milk per year. This test did not suit him. He sold the cows and purchased others by pure-bred bulls and secured an average production of 7,500 lbs. of milk per cow per year. Daughters of these cows at two years gave more milk than their dams at maturity and in a few years the average production of this herd ran up to 11,000 lbs. The poorest cow this man ever owned gave 2,600 lbs. of milk in one year while the best one, the result of the use of the pure-bred sire and better feeding, made nearly as much in one month as a three-year-old. And the sire that did a great deal of this good was bought as a calf for $65. Not a very big outlay but he had the milk blood behind him. In fact he had a fancy pedigree. The man who owns this herd is Arthur Becker. Two letters from breeders in other parts of the Province are further proof that the scrub bull is a losing proposition. E. H. Sills, of Lennox and Addington County writes, "You recently asked me to give you my experience regarding the milking qualities of Scrubs vs. Grade cattle. About twenty-one or two years ago, I purchased a farm, and as mixed farming appealed to me to be the most profitable, I decided on that line and accordingly purchased at the auction sales, and privately, nineteen head of what I know now to have been the scrubbiest of scrub cows. I hesitate to call them dairy cattle. I regret very much indeed now the fact that I kept no record of their performance. Be it sufficient to say, however, that the first year's operations quite convinced me that only a millionaire could afford to keep such a bunch, and I started the culling process. While there were no best ones, there were a lot of worst ones. These were disposed of for what I could get. The next spring I purchased a pure-bred Holstein-Friesian bull and have kept one ever since. As time slipped along, I found we were getting more milk from twelve half-breds than we were getting from the nineteen scrubs. After a few years of such decided improvement in our milk yield, and notwithstanding the fact that we had now got into a herd of really high grade cattle, we purchased a pure-bred Holstein cow with a calf by her side. This fall we will dispose of the half dozen grades we have left and our herd will consist of some twenty pure-breds. We were so well pleased with our original purchase of the cow and calf that we bought three others. We have, since starting pure-breds, sold enough of their offspring to reimburse us many times over for our initial investment. This summer we are milking ten head, and notwithstanding the fact that four of them are heifers, we are getting more milk than we did from the original nineteen scrubs. While I am not prepared to say that the mere fact of a dairyman going into pure-breds, is in itself a guarantee of success, I know that in most cases it is an incentive to adopt better methods of caring for his herd. A dairyman starting to grade up or purchase pure-breds is sure to be a progressive man, and knows, in order to get the expected results, more than breeding is required. He gives his cows better attention, feeds better and builds a silo, and then feeds better balanced and cheaper rations, and the results are so encouraging that he is always looking for improved methods of feeding and getting better sires, so that the process of evolution for a dairyman with scrub cattle to a dairyman with high-grade or pure-bred cattle, is not so expensive, that any dairyman with scrub cattle need fear the expense or the result, once he makes his decision. I would like to add that, with the present outlook for the dairymen, it is more necessary than ever to adopt better methods of feeding and breeding, in order to obtain a fair profit on the business, because nothing is more certain that it is the producers in any herd of dairy cattle that show the real profit, and it is equally certain that in too many herds, there are individuals, that at the end of the season, if separate records were kept, would show a distinct loss."

John Willoughby, of Lanark County, writes as follows: "When I was a mere lad my father bought a half-bred Holstein bull. He raised six heifer calves from this bull. When they became four years old they were equal to any eight cows in the herd. Before, father was not particular as to what kind of bull he had, so long as the cows got in calf. But when those six heifers freshened he was a little more concerned as to what kind of bull he kept. He could not see just how it would pay him to keep a pure-bred bull when he only had a grade herd or rather a scrub herd. However, the time came around when he handed the management of the farm over to myself. About the first purchase I made was a pure-bred Holstein bull. I raised ten or twelve heifers from this bull, and any one of those heifers at five years old would nearly double their mother in production. This set me thinking, if a half-bred cow was so much superior to a scrub, would not a pure-bred prove much better than a half-bred. So I decided to try it and so I did. I found they were superior to the grade—as much superior to the grade as the grade cow was to the scrub."

What has been said by breeders of dairy cattle is borne out by breeders of beef cattle. I might just quote from two letters to show that the beef men are thinking along the same lines as the dairymen.

R. A. Finn, Agricultural Representative, gives the experience of a London Township farmer in Middlesex County. He says: "The experience of a London Township farmer with pure-bred and scrub bulls shows very clearly the place of the scrub sire. He told me that six years ago he had in his herd eight very even pure-bred cows, that gave him eight bull calves from a pure-bred sire. These were made steers and kept until two and one-half years old, finished on grass and averaged $140 each.

"The next year the farmer was ailing and was unable to take his cows a distance to a pure-bred sire. A neighbor kindly offered him the use of his scrub sire. The progeny from this mating from which five steers were kept, fed and marketed under the same conditions brought $114 each, although there had been a slight rise in price during the year. This farmer stated that on the five animals he lost $130 in one year, and to the average farmer using a scrub sire on ten females the loss would be $260, and this from a beef standpoint alone. If the daughters of the scrub bull were kept in the herd this loss would show itself in their calves in a lesser degree. He claimed that as soon as farmers keep an accurate profit and loss account the scrub bull will disappear."

A Peel County farmer's experience is as follows: "Though we had been using pure-bred bulls for many years previous to a time about nine years ago we yielded to temptation on a growthy looking, well built grade Shorthorn for which we paid $35 at six months old. (Why should he not produce as good stock as a registered calf costing $75, more or less?) When his first calves were four or five months old they seemed a poor lot, but the bull was kept for another season in spite of our observations. When the steers were put in to feed when rising two years, as is our custom, the folly of our selection most glaringly stared us in the face every time we went to feed them. They wouldn't respond to good feeding and attention. There was little pleasure in trying to fatten them, and they went to market with few exceptions, an inferior bunch. We had learned our lesson, and I sometimes think it was fortunate that we did keep him long enough to be really impressed forever by the folly of using a cheap sire.

" Our next bull was of Gainford Marquis blood, costing $100 at six months. Our first crop of calves healed our wounds. Fine growthy fellows, they accounted for any feed given, were a source of pleasure to the eye, and brought the best price when sent to market. Counting the difference in weight, adding the extra value per pound and making allowance for feed consumed, there was a balance of from $20 to $25 per steer in favor of the good bull. A worse case was that of heifers, as they had to be sold for beef. Instead of making selections which would have improved our herd of breeding cows we had lost two years. Though it cannot be counted in dollars and cents, the satisfaction in feeding and caring for good animals is really worth more than all other features combined.

" The grade and scrub pure-bred bulls are 'has beens' on this farm, and we hope soon will be banished entirely from the County of Peel and the Province of Ontario."

The case against the grade and scrub bull is so clear that the Federal and Provincial Departments of Agriculture have decided to co-operate in a big campaign to bring the facts before the people, and encourage and help them to replace many grades and scrubs with good pure-bred bulls. Something must also be done to eliminate the inferior pure-bred. There is no place for scrub pure-breds, and the breeders of pure-bred cattle should, for the sake of the cause, use the knife on all cull bull calves rather than attempt to sell them for breeding purposes. We believe all breeders of pure-breds realize that this is essential and are ready to co-operate.

If the good bull is half the herd the scrub is all of it. The scrub must go.

Q.—What is the percentage of butter fat in the grade as compared with the pure-bred herds?

A.—I have no actual figures for that. Of course, I would not want you to run away with the idea that we are trying to get every man to keep pure-bred milch cows. That is not the idea of this campaign. I think it would be an impossible ideal for us to attempt. What we want to do is get every man to keep a pure-bred sire and high grade milch cows. As to the percentage of butter fat between grades and pure breds, I have no definite figures, and so far as the bull is concerned, I think I am safe in saying that you would run a better chance of maintaining a fairly high percentage of butter fat by the use of a sire bred along those lines than you would by a nondescript grade. All we are interested in is replacing the scrub sire with a pure-bred, and as far as the dairy or even the beef business is concerned, it must go on for years with a real good high-grade herd.

SOME PROBLEMS OF THE MILK PRODUCER.

E. H. Stonehouse, Weston.

What we are after is increased production and a revolution in our conditions such as has been spoken of by the previous speakers. But these things will come very, very gradually, because I find in my travels around the country that, as a general rule, the producer accepts theoretically measures which have been advocated for his advantage, but is slow to adopt them practically. We have had no end of instruction regarding the pure-bred sire and his influence on the dairy herd; I believe every producer throughout the length and breadth of this Province has been reached, and yet we find that the advice has been accepted in a practical manner by very few. There has been a large increase in herd production in the last few years, but that has been brought about by comparatively few producers, that is, the great mass of producers to-day are following along the same old lines that they did years and years ago.

In regard to this great industry that we have under consideration this afternoon. The phase of it I would like to touch upon is its asset as a food. The importance of our industry has only been impressed upon us during the last four or five years. The conditions brought about by the war in regard to foods have impressed upon the minds of people not only of this country but of the whole world, the importance of milk products as a food for the human race, and this is particularly so in regard to child life. How deplorable have been the conditions in Italy, where a million children that had been born in that country during the last year or two were suffering from malnutrition, and were entering upon the race of life handicapped in such a manner that their chances for achievement were very materially reduced. While there are extreme cases, we know from the statistics in this country that milk and its products are not being used to anything like the extent they should be used, and this is particularly true in our large cities and towns. In fact the increase in the price of milk and dairy products has been used as an excuse for curtailing their consumption. There are two families in my neighborhood, each with the mother and father and three children; in the first home they use two quarts of milk a day; the father said: "We could not think of doing with less than that to do justice to our children"; in the neighbor's house they use one pint of milk a day. That is the condition we find in our cities and towns. Here and there we find people who have awakened to the importance of milk as a food, but we have vast multitudes of people who are curtailing on this necessary article of food for their children simply because they think the price is a little too high, because they have never investigated the food value of milk and do not understand that milk and dairy products are the very cheapest foods on the market at any price.

There are two or three things I want to mention. Between the producer and the manufacturer of his products, there has not always existed the very best of feeling; that is, there has been a suspicion in the mind of the producer that he has not been paid a price justified by market conditions, and this has been largely due to the fact that we have not got together in conventions of this kind where we could have heart-to-heart talks, which are necessary for man to understand man. I have found out that where such talks have taken place, where we have become better acquainted and understand one another's difficulties better, there has been created a much better feeling all along the line. I believe that we are having recognized to-day by the business men of this country, by the manufacturer of dairy products, that one of the things that they must strive for is a satisfied producer of milk. If they are going to have the product in its purity and in the abundance which they require in their business, it is necessary that the producer must realize he is a partner in that business, and not simply a machine to produce a supply of milk for the manufacturer of dairy products. It is necessary that the manufacturer and distributer should have the co-operation of the producer if the best is to be arrived at along the lines of the dairy industry.

In the recent discussions and in the recent investigations which have been held in regard to milk and its products, it has been recognized that anything that would tend to injure the industry is something that should be avoided and eliminated as quickly as possible. This is being done to a greater or less extent. The investigation that we have just had has proved very conclusively that the charges that have been hurled at the head of the producer and manufacturer and distributer as being profiteers and holding up the consumers, are largely of imagination, that no such state of affairs existed, and while conditions of distribution and of manufacture, even conditions of production may be improved on, there has not been any act of profiteering; the reverse rather has been the case.

As was brought out very clearly at the Eastern Dairymen's Convention, the production of milk has increased very materially; but when we consider that the production of milk is not in the millions but billions of pounds annually, we realize what a tremendous factor this is in the economic life of this country, and the demand for our product is increasing tremendously not only in this country but in other countries. I believe for years to come there will be a market for every pound of milk that we can produce, either in its raw or manufactured form, in this and other countries, and at prices that will be remunerative and profitable for all those engaged in the industry.

I wish to pay Dr. Margaret Patterson a tribute of recognition as she has done more, perhaps, than any other lady in the Province of Ontario, or the Dominion of Canada, in setting out the facts regarding the advantages of milk. In the recent investigation, Dr. Patterson was one of the first to say that as a human food, particularly for children, milk was the cheapest article we had on the markets in this country. But even in this country we should have a very large increase in the consumption of milk, and this can only be brought about in one way, and that is by the advertising of our products and of their food value. No organized effort has been made by the industry as a whole along these lines. We have various manufacturing industries doing it upon their own initiative, and doing it perhaps reasonably effectively, but we have not had any organized plan of advertising in this country such as they have across the line.

I was struck by the effectiveness of the advertising matter exhibited at the Chicago Show, and the wonderful strides they have made in the sale of their dairy products, largely through this agency, and while this perhaps would be difficult here on such an extensive scale, it should be carried on by any branch of the industry or by any Provincial Association. Here is a sphere of action and usefulness for the National Dairy Council of Canada, which it fully realizes at the present time and has taken under its consideration. If we are going to have our industry grow and increase, it is by all branches of the industry working together. It is not sufficient for one branch of the industry to put forth an effort, and then lie down, and then another one do the same, but it is essential to have a perfect understanding between every branch of the industry, all working together for a common object.

Some people think I am not a producer, that I am a sort of professional leader to bring the Children of Israel into the Promised Land, but I can assure you that I am actually a producer, and if you come down to my farm you would often find me milking my own cows.

I would like to deal with the problems as they present themselves to most of the producers, and you know the first thing that occupies the mind of the producer is the price of his product. That is human nature. The producer for a great number of years has been taking the stand that he has not been adequately remunerated for his labor and outlay in milk production, that he has been producing practically at a loss. On the average, he has been holding his own. Up to the present time we simply had his word for it; when he was asked to give facts and figures, we found he had not these facts and figures to produce, and because of that we were often the laughing-stock of business people who had the details of their own business at their finger ends; but the average farm of Ontario is so complicated that to separate milk production from the other departments of the farm is very difficult, and so we found for many years we were not able to present our case so as to appeal to the business men of the country.

Within the last year or two, surveys have been made by the Department of Agriculture, of the Province of Ontario, which have borne out the contention of the producer himself in a remarkable degree, both in Oxford County and Dundas County. The fact has been established that the producer is selling his product at very nearly the cost of production.

This is a state of affairs that cannot be tolerated. It cannot continue if we are going to have the very best that there is in the dairy business, and it would be well for us to investigate and find whether the blame lies with the farmer himself or should be placed on some other shoulders. In looking over the matter, we have found the farmer himself very often has not made use of the light he had nor the examples that have been cited to him in order to raise the standard of his business and increase his production, or to so regulate his business that it would be more profitable to him. We, as producers, must take advantage of these findings. We find in the first place, that we have been dwelling particularly on the fact that the price that we receive for our product must be the basis upon which we are to make our calculations; but we are finding out gradually that there is another feature—another source from which we must derive our profits and to which we must look for our profits, and that is in economical production.

While there are certain influences that regulate the value of our product, here is a field entirely within our own control in which we have no opposition whatever, and where we can go the limit without being molested by any Board of Commerce. How is this to be done? Herd improvement has been very clearly expounded this afternoon, and I do not need to elaborate along that line further, but when we have eliminated our unprofitable heifers, when we have made use of the pure-bred bull and have not only a good productive string, but a string that produces good quality of milk, then we have to look toward the care of that herd.

A great many of us think if we have an animal itself, that is all that is necessary, but in going through the length and breadth of our Province we see animals kept in such conditions that they cannot do their best, and there is a consequent great loss. Take this time of the year particularly; go into hundreds of thousands of stables through our Province, and we find cows with the hair rubbed off and fairly ready to tear their stables down with misery because of lice pests—something we can easily eliminate, something that a very little time will rectify, and yet we find great numbers of our people do not care to know nor realize there is anything the matter. If this pest becomes prevalent it is enough to cut a herd practically in half in a year. Then in the stable itself, in the lighting, in the comfort, in the cleanliness, in seeing that they have pure water before them constantly, and pure air—all these factors have a very great influence in determining as to whether that herd shall be profitable or unprofitable, and these little things that many people do not notice or do not think worth while, are very often the difference between profit and loss in the dairy industry.

Then in regard to the feeding of the herd, we find this is just as important. A great many of our farmers simply throw the food into the manger—a certain amount of concentrates and roughage—and think that is all that is required. They do not make a study of that particular animal and its requirements. Make a study of the balanced ration so that that animal may do the best that is in her for the man who owns her and whose servant she is.

A great many of us depend on buying our feeds or picking them up wherever we can, but the man who has, during the past year, paid attention to providing succulent food whereby he could eliminate the high priced concentrates is the man who is showing returns in his pocket.

Of course, we who are supplying markets like Toronto or other large cities where we have to keep up the supply of milk the year round, must conduct our operations a little differently to the average man. We must use a large supply of concentrates, and while we require to buy them on the market we find they cost us a great deal more money than they used to cost us, and we have had to adopt a system of co-operative buying. Our producers are buying their feeds in carload lots at the lowest margin and in sufficient quantity to make them profitable. We find in these ways we may decrease the cost of production and increase our profits. While the Association is trying to obtain a fair price—not an excessive price—we say we have in our own hands means whereby we can materially lessen the cost.

I would like to speak for a few minutes on the Ontario Milk and Cream Producers' Association, and mention the National Dairy Council. I see with us this afternoon, Mr. D'Arcy Scott, Secretary of the National Dairy Council. I think, perhaps, Mr. President, you can find time to ask him to speak in case he has something worth while telling you. But I wish to mention in regard to the Ontario Association, that the genesis of this Association was that very feeling on the part of the farmer that he was not getting a square deal. The lesson has been brought home to the farmer through events which have transpired in recent years, that if it was necessary for the meat packers to organize, if it was necessary for all other branches of industry in our country to organize, it was much more necessary for the milk producers to organize. And so we find to-day, throughout this Province of Ontario and throughout the other Provinces of our Dominion, that the milk producers have their organizations, and it will not be long before we have this and the other Provinces covered by a Milk Producers' Organization, and we hope to have practically every milk producer in our organization.

The objects of our organization are not, as a great many people seem inclined to think, to extract the very last cent possible from the consumer of our product. The first object of our Association is to build up the industry, or rather the portion of the industry which lies at the foundation of your business and the business of every other branch of the dairy industry. You ask me in what way? In the first place, by producing an abundance of milk, that every factory may be fully employed, in order that the demands for our product in our own and other countries may be fully met, in order that our export trade may be built up. In the second place, by producing a purer article. We are emphasizing these facts generally. In our discussions, the question of price seldom comes up, because we realize if we have the quantity and the quality the price will very largely take care of itself, particularly if we lend it a little assistance from time to time.

These are, perhaps, the basic objects of our associations, and then there are all the other matters that are incidental to the production of milk; thus we are trying to help one another in the work we have undertaken, and the question of price, when it does come up, is not dealt with in a way that we wish to extract the last cent, but in a way to determine what a fair price for our product would be, and we are beginning to find out and receive that fair price now in almost every instance.

We have found that the Provincial Organizations were not sufficient. We have found, and you have realized, that it was not enough to have an Eastern and Western Dairymen's Association; you are realizing to-day perhaps better than ever before, and we are realizing to-day better than ever before that we must have co-operation between all the branches of the dairy industry. The producer wants to understand your conditions, and I believe you want to understand his conditions. Then we wish to have all the various branches of the industry direct their undivided attention along certain lines, which shall be for the betterment of the whole industry, and we find this is something that cannot be done by the Ontario Milk Producers' Association, or the Western Dairymen's Association or any other organization working on its own behalf. That is the reason there came a demand in the Province of Ontario first, for co-operation throughout the whole of the Dominion. That feeling grew until in Ottawa a year ago it resulted in the formation of the National Dairy Council of Canada, which takes care of all the interests of the industry, not only the interests of the manufacturers and the producers, but of the distributors and every other man, or company or organization that is engaged in dairying and in the dairy industry.

I feel deadly in earnest in regard to this great industry and its future. I am willing to sacrifice myself and my time, and I believe there are hundreds of men throughout the Dominion who are willing to give of their time and energies in order that there may be built up in this country an organization which shall at all times be ready to safeguard the interests of the industry wherever it may be, and not only that, but to see the industry is broadened out and occupies the place in the country which is due so great an industry.

THE NATIONAL DAIRY COUNCIL

D'Arcy Scott, Secretary National Dairy Council, Ottawa.

It is important that an industry so thoroughly national should have a National Dairy Council to look after its interest. In 1917, 1,151,000 tons of milk and 29,000 tons of butter fat were delivered to the 1,000 cheese, butter and ice cream plants. Adding to that the volume of milk consumed in Canada it will give you some idea of the proportions of the industry.

The National Dairy Council was formed in the fall of 1918. The objects of the Dairy Council are the consideration and advancement of all matters tending towards the improvement of the dairy industry in Canada, including production, manufacture, transportation, storage, marketing, etc.

(*a*) By analyzing proposed legislation and regulations, both provincial and federal, and assisting in obtaining such legislation and regulations as will be beneficial to the dairy industry.

(*b*) By emphasizing through interprovincial co-operation the importance of the industry and to obtain for it the position it deserves as the most technical and complicated branch of agriculture.

(*c*) By encouraging the adoption throughout Canada of uniform standards for dairy products.

(*d*) By encouraging the holding of meetings, the distribution of literature, and by systematic advertising, inform the general public in regard to the food value of dairy products.

(*e*) By encouraging production, uniform standards of grading and by co-operation in marketing, assist in developing a better trade for Canadian dairy products.

(*f*) To co-operate with the railways in securing the best conditions for transportation, and a just equalization of charges therefor.

(*g*) To carry on any business which may seem to the Council capable of being carried on in furtherance of the objects above set out.

In order to make the Dairy Council thoroughly representative all the different elements that go to make up the dairy industry have been provided for in the constitution. The delegates to the Council are not elected by the Council but are appointed by the different dairy organizations throughout the country, and are sent to the Council as the representatives of the interest that sent them there.

What has the Dairy Council done? I am the only paid official of the Council, and hold three offices, secretary, treasurer and legal advisor. I think it is not because of any experience I have had as a producer that I was selected, it was because of the fact that I served a term of ten years on the Railway Commission and have become familiar with legislative and departmental work at Ottawa, and I have some qualifications which would enable the Council to have a man at Ottawa to watch government regulations, to look after the interest of the shipper so far as railway rates are concerned and to see that the interests of all branches are cared for. We have accomplished something which has been the means of saving hundreds of dollars to everybody interested in the shipping of dairy products. As you will remember, last spring, the railways desired to increase their express rates on the shipment of cream. We put up a hard fight, and as a result the decision of the Commission was that there was to be no increase at all in the express rates. On the question of the shipping of milk in baggage cars, the railway tried to increase those rates, but I am thankful to say that not one single cent increase has been allowed. The railways tried to have the increase effective on May 1st; we fought it and got the order issued prohibiting that increase. The same rate has prevailed for the shipment of cheese as formerly.

In order to carry on our work, particularly the advertising and propaganda work, we will require money, and at the last meeting of our Council at Ottawa a scheme was adopted whereby we decided to ask the manufacturers to contribute the sum of 1c. per one hundred pounds for the butter fat they produced and one-third of a cent per thousand pounds for the milk produced; and that each producer be invited to give the sum of 25c. If that were done we would have a substantial sum which would enable us to embark upon an advertising campaign, and an educational campaign to get the people of the country to appreciate what it means to feed a family on butter, cheese and ice cream, and in that way induce a much greater demand for milk products at home. When that demand has arrived, a method will have to be devised to increase production, not by increasing herds so much as by increasing the efficiency of individual herds.

Following are extracts from address by Mr. D'Arcy Scott at the Eastern Ontario Convention.

We have at our office at Ottawa the legislation affecting the dairy interest of all the Provinces and the Dominion of Canada. It is the duty of the officials to check them over and see that the interests of the dairymen are properly protected.

Another question that we have taken up is that of shipping milk in baggage cars. The desire of the railway companies was to increase this rate from 25 to 50 per cent. We opposed that application, and while it has not yet been decided, we have by our action prevented the railways from getting an increase from the 1st of May until the present time. An effort was made to increase the rates on cheese to Montreal for export, and so far we have prevented the railways from getting any increase. The Council, through Mr. Stonehouse and myself, have attended a number of the meetings of the Board of Commerce, and we have succeeded in all cases in maintaining the prices which the farmer asked for milk. In Toronto, the summer rate was $2.55 for an 80-lb. can, and they issued an order that the summer rate was to be maintained for forty days longer. Our Council put up a fight before the Board of Commerce, and after several days, with the splendid assistance we got from the producers in Toronto and from Prof. Leitch, of the Guelph O.A.C., we secured a rate of $3.10 for an 8-gallon can in Toronto. We said to them that if the Wheat Board were going to keep the price of bran and shorts up to $45 and $52 per ton we could not bring down the price of milk.

NOMINATING COMMITTEE.

The following were appointed a Nominating Committee:
J. Bristow, John Almonte, Garnet Bain, J. H. Stedelbauer, Robert Gale.

ADDRESSES OF WELCOME.

Mr. Sidney Little, Mayor of London, and Mr. G. A. Reid, of the London Chamber of Commerce, gave cordial addresses of welcome, to which the Chairman suitably responded.

ADDRESS BY DR. CREELMAN.

Dr. G. C. Creelman delivered an interesting address touching the work of the Ontario Agricultural College during the fifteen years in which he was connected with it as President.

THE FOOD SITUATION.

Dr. James W. Robertson, Ottawa.

As representative of the Dominion Department of Agriculture and Canada Food Board, Dr. Robertson visited Great Britain, France and Italy in order to observe conditions and to make recommendations regarding food problems.

As a result of her war effort and response to the appeal for greater production and conservation, "Canada has come to a new place in the esteem and expectations of Europe and the United States. That new recognition of Canada—and new expectations from her—was based principally on what Canada had done through four channels: her army, food supplies, munitions, and Red Cross service.

"The fighting of the Canadian army has given us fame that will endure. Perhaps Canadians pay less heed to that than do the British, or the French, or the Italians, or the Americans. Our people as yet do not generally know how much our army did; they do not appreciate to the full what magnificent service to the Allied cause the Canadian Corps rendered. The estimate of Europe is that it was one of the best fighting units on the whole Western front."

The speaker set forth Canada's splendid accomplishments in furnishing munitions, food and Red Cross supplies and continued:

The Present Situation.

The governments still maintain definite policies to encourage production, to control prices, and to regulate distribution. During the war, production was enforced by law, whether all the operations were profitable to the farmers or not. In the United Kingdom, France, Italy, and other European countries, the farmers were told by Government compulsory authority, to a considerable extent, what to sow and how many animals to keep. The feeding of animals was regulated, the use of products was defined and restricted, and the prices for produce were fixed. The farmers, to a defined extent, were compelled to sell their cereals and fodder as such, instead of feeding them and selling the produce in the form of meat. The purpose of such control was to increase the total calories in the food available to the consumer by restriction of the production of meat. These drastic measures were deemed necessary for national safety during the war. Since then the farmers have been encouraged to produce up to their maximum by a guarantee of minimum prices. In Great Britain, for example, prices are guaranteed to the farmers for such things as wheat, barley, oats, beef, cheese, butter and milk. Maximum retail prices are fixed to the consumers, and the commission, profits, or spread, permissible to merchants who handle the commodities, are determined by the Government. For example, the farmers were guaranteed a price of about $2.50 a bushel for wheat, whereas the price obtainable from the millers, as I have already stated, was about $1.80 per bushel. For cattle the farmers were guaranteed, for prime quality, 17 cents per pound on the hoof in the late autumn, which price is increased gradually to 20 cents per pound live weight in July, 1920. In the autumn the Scotch farmers were paid 2/1d. (equal to 50 cents) per pound for their cheese; at the same time, the farmer who received that price, or anyone else, could go to a retail shop and purchase cheese at 1/6d. (equal to 36 cents) per pound. On the one hand, the Government was guaranteeing and paying an extremely high price in order to encourage large production and ensure the keeping over of milking cows for production in the spring and summer of the following year. On the other hand, in order that miners and other workers of the industrial population, to whom cheese is a necessary and common article of consumption, might obtain it at a reasonable rate, the maximum retail price was fixed at 14 cents per pound less than the Government paid to the farmer. Butter is still so scarce that it is rationed, in order that everybody may have a fair chance to receive an equal share. The quantity available under the rationing scheme is only one ounce per person per week. In other words, the consumer in the United Kingdom can obtain only one pound of butter in four months. In the case of milk, the wholesale prices available to farmers for seven months, October to April, were fixed from 52 cents a gallon, for October and April, to 78 cents in midwinter, the average being 68 cents per gallon for the period. The maximum retail prices to the consumers were fixed from 22 to 24 cents per quart: as a matter of fact, the average retail price has been about 21 cents per quart. While it is recognized that these are extreme figures and impose real hardship on poorer families, the Government considers them necessary to ensure a sufficient supply of milk, in order that children particularly might not suffer from its absence. Then, to permit families who could not otherwise secure an adequate supply, the municipalities have been authorized to supply milk at less than cost, the difference being payable ultimately through the rates.

In this connection it may be appropriate for me to refer to a question which has been much discussed among dairymen since August. It has been called "the fixed price for cheese." What is really meant, by those who speak with a knowledge of the facts, is the price offered by the British Ministry of Food at which it would buy a certain quantity of cheese. That Ministry has no power to establish "a fixed price" in Canada; and the Government of Canada, so far as I know (and as recently Representative of the Department of Agriculture and Canadian Director of Food Supplies in Europe, I would know), has not taken any action in any way to limit the price or control the movement of cheese. There was "a fixed price" in 1918, while the war was on; the average was 23.35 cents f.o.b. steamer at Montreal. But during the whole of the cheese season of 1919, there was an open market in Canada. In the United Kingdom there was an open market for a brief period with limitations. The chief controlling limitations were the fixed maximum price retail (1/6 per lb.), and the fact that the British Ministry of Food had purchased the New Zealand output to August, 1920, at 21½ cents. During the period, in 1919, when control of distribution in the United Kingdom was not applied to Canadian cheese, the Ministry discovered that there was an increasing inequality of distribution, and that larger quantities of cheese were likely to go into consumption before the winter began than was compatible with the policy of equalizing the supply throughout the year. As a means towards correcting, and then preventing, what was regarded as highly undesirable, the Ministry withdrew from British merchants the right of free and uncontrolled importation. That by itself would have shut out Canada for a time from the British market. To avoid doing that the British Ministry arranged to buy Canadian cheese of first quality at 25 cents per lb. at Montreal. The Ministry, I think, agreed to pay the Montreal merchants a reasonable commission for their services in handling the cheese. The intention was to store the cheese in Canada until required in the British markets under the policy of equalizing the distribution. As to the price offered, the Ministry stated it could not afford to pay any more and hope to come out without loss. As a matter of fact, the strong probability, if not the certainty, is that, owing in part to the fall in exchange, which was not unexpected in August, the Ministry will lose from 2 to 4 cents per lb. on all cheese it purchased in Canada last season.

Adjustments between the cost to the British Government, under guaranteed prices, and the amounts received under maximum retail prices are made by means of subsidies and to some extent by profits made on supplies purchased at relatively lower prices in the Argentine and elsewhere. The bread subsidy in Great Britain has amounted to about $250,000,000 per annum: in France to about $480,000,000 per annum; and in Italy to about $200,000,000. With even these large subsidies, owing to the dislocations and disturbances of the transition period from war to peace, many families would not have been able to obtain adequate nourishment. According to Mr. Hoover's estimate, as late as July, 1919, about 15,000,000 families in European countries were receiving unemployment or other similar allowances.

BEARING ON THE HIGH COST OF LIVING.

These matters have a direct bearing on the problem of the High Cost of Living. There is an apparent conflict between the different parts of the Government policies. On the one hand, Governments are holding prices up in order to encourage production of enough to go round—in order that farmers may be induced to produce up to the very maximum of the capacity of their farms and the limit of their strength. With the other hand, by means of maximum retail prices, they are holding prices down in order that these may be within the range of what the masses of the poorer people are able and willing to pay. One of the primary causes of the High Cost of Living is that there are not enough of the necessary commodities to go around, and because of the fear that there will not be enough to meet the actual needs. A secondary cause is the depreciation in the value or buying power of the unit of money. That works two ways, with injurious results from both. Many of those who receive greatly increased wages, because of the reduced value of money, are led to spend freely and wastefully. That aggravates the scarcity. On the other hand, some farmers who may be considering the investment or spending of money for wages, etc., to increase production, are deterred from doing so by reason of the number of dollars, or other units, that would be involved in the operation.

The High Cost of Living is more than an economic or political phrase. It is a grim reality which is being felt acutely by millions of people. There is not yet enough food in the world to meet the demand, to meet the actual needs, much less to be safe against extended semi-famine conditions in case there should be a comparative failure of crops for one year. We have not got any reserves in sight. The nations of the world cannot afford at this stage, after the great war struggle for justice and fair-play, to leave humanity exposed to the calamity of a poor crop all round with no reserves to fall back upon. In Canada, to keep ourselves safe and make ourselves strong in an economic sense, we must produce and we must save. This course is the right and wise one for the nation. It is also the best one from every point of view for every province, every county, all communities, and every individual farmer.

THE OPPORTUNITY AND OBLIGATION OF CANADA.

While increased production can no longer be urged as a necessity of war, every man who has had an opportunity of learning the facts and studying the situation is convinced that increased production is a necessity of peace. It is needed in all countries with whom we shared the losses of war before our united efforts won complete victory. There is no other way to reach real prosperity, to remove dangerous discontent, and to open the way for abiding economic and social justice to each and all.

While it is probable that there will be some reduction in the price of farm products during coming years, in my opinion it is not at all probable that the relative prices of farm products will come down in proportion to those of other articles and commodities. Before the war farmers were not receiving adequate remuneration for their labor, management and capital. Some indication of the probable order in which prices may fall may be obtained from an examination of the extent of the advances in price which have occurred since the war. Comparing the prices in August, 1914, with the prices in August, 1919, the advances in Canada in four large groups were as follows: Western grains, 160 per cent.; hogs and products, 142 per cent.; cattle and beef, (from 1913) 96 per cent; dairy products, 108 per cent.

THE OUTLOOK.

Under all the circumstances, in my opinion, the farmers of Canada, during the next two years, will have the best chance, during my life time, to make reasonable and even large profits. Sometimes appeals are made, in the name of patriotism and altruism. At the present time the first appeal is one of self-interest. And while money is being made by the individual, benefit is being brought to the community and the nation, and needed and valuable service rendered to humanity. All three "pulls," self-interest, patriotism, and humane service, are in one direction. Consequently the farmers of Canada will not make any mistake in producing as much as they can of all the staple food products. They are sure to be needed.

After reviewing the economic situation, extent of resources and public debt, the speaker concluded by stating that, "The necessary increased expenditure, including payment of debt and interest by the Government must be obtained either by some form of taxation or a levy on the wealth of the people. It is equal to about $100 per family annually. Fortunately the bulk of these payments is due to our own people resident in Canada. So although the war has been won, we need to continue our saving and our production in order that our social organization, our democratic institutions, and self-government through and under law and order may be maintained and improved.

DAIRY AWARDS, WINTER DAIRY EXHIBITION, 1920.

CLASS 1.

Section 1, September White Cheese.

	Score		Score.
1. C. J. Donnelly, Lambeth	97.99	6. J. T. Donnelly, St. Thomas	96.66
2. J. E. Stedelbauer, Vienna	97.47	7. W. Hargraves, Atwood	95.82
3. H. E. Donnelly, Straffordville.	97.24	8. Jos. Skelton, Kintore	95.81
4. H. J. Neeb, Tavistock	97.06	9. Martin Calder, Stratford	95.73
5. Wm. Boyes, Springfield	96.74		

Section 2, September Coloured Cheese.

	Score		Score
1. H. J. Neeb, Tavistock	97.73	6. W. Hargraves, Atwood	97.07
2. H. E. Donnelly, Straffordville.	97.65	7. Jos. Skelton, Kintore	96 65
3. C. J. Donnelly, Lambeth	97.57	8. W. J. Murphy, Thorndale	96.49
4. J. T. Donnelly, St. Thomas	97.40	9. B. F Howes, W. Monkton	96.48
5. J. E. Stedelbauer, Vienna	97.15		

CLASS 2.

Section 1, October White Cheese.

	Score
1. F. C. Eastman, Arkona	98.32
2. C. J. Donnelly, Lambeth	97.99
3. J. E. Stedelbauer, Vienna	97.83
4. H. E. Donnelly, Straffordville	97.66
5. H. J. Neeb, Tavistock	97.57
6. J. T. Donnelly, St. Thomas (Won on flavor)	96.66
7. W. Hargraves, Atwood	96.66
8. W. C. Loughin, Thamesford	96.58
9. Frank Norman, Wellesley	96.48

Section 2, October Coloured Cheese.

	Score.
1. H. E. Donnelly, Straffordville	97.32
2. J. E. Stedelbauer, Vienna	96.81
3. W. J. Murphy, Thorndale	
4. W. C. Loughin, Thamesford (eq.)	96.65
5. W. Hargraves, Atwood	96.57
6. Jos. Skelton, Kintore	96.48
7. C. J. Donnelly, Lambeth	96.40
8. Frank Norman, Wellesley	95.99
9. J. T. Donnelly, St. Thomas	95.98

CLASS 3.

Section 1, 56-lb. Box Butter.

	Score
1. Jno. R. Almont, Silverdale	96.10
2. H. McGenn, Belmont	94.77
3. Ontario Creameries, Ltd., London	94.73
4. E. D. Armstrong, Exeter	94.27
5. Jas. E. Wilson, Forest	93.26
6. Harry Frey, Woodham	93.10
7. C. A. Davies, Guelph	93.08
8. Jno. Main, Warwick	93.07
9. H. F. Newman, Gamebridge	92.90

Section 2, 1-lb. Prints.

	Score
1. H. McGenn, Belmont	95.60
2. Jno. R. Almont, Silverdale	94.92
3. C. A. Davies, Guelph	94.90
4. Harry Frey, Woodham	94.72
5. Ontario Creameries, Ltd., London	94.65
6. Whyte Packing Co., Brockville	94.42
7. M. J. Lewis, London	94.16
8. S. E. Rozell, Clinton	94.14

CLASS 4.

Section 1, 56-lb. Box October Butter.

	Score
1. Ont. Creameries, Ltd., London	95.57
2. Whyte Packing Co., Brockville	94.49
3. Jno. Borland, Simcoe	94.41
4. T. J. Newman, Lorneville	94.05
5. C. A. Davies, Guelph	93.79
6. H. F. Newman, Gamebridge	93.57
7. Strathroy Creamery, Strathroy	93.47
8. Jno. R. Almont	93.15
9. M. J. Lewis, London	92.72

CLASS 5.

Section 1, Three Stilton Cheese.

	Score
1. C. J. Donnelly, Lambeth	97.48
2. J. T. Donnelly, St. Thomas (Won on flavor)	97.23
3. W. C. Loughin, Thamesford	97.23
4. Jos. Skelton, Kintore (Won on flavor)	96.82
5. H. E. Donnelly, Straffordville	96.82
6. Leo Wallis, Petrolia	96.40

Section 2, Two Flat Cheese.

	Score
1. H. J. Neeb, Tavistock	98.15
2. J. T. Donnelly, St. Thomas	98.07
3. W. Hargraves, Atwood	97.91
4. C. J. Donnelly, Lambeth	97.83
5. H. E. Donnelly, Straffordville	97.57
6. Jos. Skelton, Kintore	97.40
7. F. C. Eastman, Arkona	96.99
8. J. E. Stedelbauer, Vienna	96.83

CLASS 6.

Section 1, Whey Butter.

	Score.
1. C. J. Donnelly, Lambeth	90.10
2. Whyte Packing Co.	89.83

SPECIAL PRIZES.

By the Heller & Merz Co., 505 Hudson St., New York—C. Richardson & Co., St. Mary's, Ont., Canadian Agents for Alderney Butter Color: $10.00 in cash—To the Buttermaker securing the highest score on butter exhibited in Class III, colored with Alderney Butter Color.—Jno. R. Almont, Silverdale.

$5.00 in cash—To the Buttermaker securing the second highest score on butter exhibited in Class III, colored with Alderney Butter Color.—H. McGenn, Belmont.

By C. Richardson & Co., St. Mary's: $10.00 in Cash—To the Buttermaker securing the highest score on Butter exhibited in Class IV, Sec. 1, colored with Alderney Butter Color.—Ontario Creameries, Ltd., London.

$5.00 in Cash—To the Buttermaker securing the second highest score on Butter exhibited in Class IV, Sec. 1, colored with Alderney Butter Color.—Whyte Packing Co., Brockville.

NOTE.—The winners of the Heller & Merz Co., and C. Richardson & Co.'s special prizes will, if required, be expected to take an affidavit stating that they have been continuous users of Alderney Butter Color *during the past twelve months.*

By the R. M. Ballantyne, Ltd., Stratford, Ont., for D. H. Burrell & Co., Little Falls, N.Y., and Toronto, Ont., manufacturers of Chr. Hansen's Rennet Extract and Color: One Four-Bottle Facile Babcock Milk Tester—To the Cheesemaker securing the highest score on September White Cheese, Class I, Sec. 1.—J. E. Stedelbauer, Vienna.

One Case of Hansen's Cheese Color—To the Cheesemaker securing the highest score on October Colored Cheese, Class II, Sec. 2.—H. E. Donnelly, Straffordville.

By Geo. E. Booth, Ingersoll, for D. H. Burrell & Co., Little Falls, N.Y., and Toronto, Ont., manufacturers of Chr. Hansen's Rennet Extract and Color: One case of Hansen's Cheese Color—To the Cheesemaker securing the highest score on September Colored Cheese, Class I, Sec. 2.—H. J. Neeb, Tavistock.

One Four-Bottle Facile Babcock Milk Tester—To the Cheesemaker securing the highest score on October White Cheese, Class I, Sec. 1.—F. C. Eastman, Arkona.

By the Slawson Co., Ingersoll, for D. H. Burrell & Co., Little Falls, N.Y., and Toronto, Ont., manufacturers of Chr. Hansen's Rennet Extract and Color: One four-gallon keg of Hansen's Cheese Color—To the Cheesemaker securing the highest score on October White Cheese, Class II, Sec. 1.—F. C. Eastman, Arkona.

One Four-Bottle Facile Babcock Milk Tester—To the Cheesemaker securing the highest score on October Colored Cheese, Class II, Sec. 2.—H. E. Donnelly, Straffordville.

NOTE.—All Cheese competing for the special prizes offered by the R. M. Ballantyne, Limited, Geo. E. Booth and The Slawson Co., must be made with Hansen's Rennet Extract and Color. No special Cheese required.

By the J. B. Ford Co., Wyandotte, Mich., manufacturers of Wyandotte Dairymen's Cleaner and Cleanser: One Finest Quality Gentleman's Silk Umbrella—To the Cheesemaker having the best finished and most stylish-looking Cheese on exhibition in Class I.—C. J. Donnelly, Lambeth.

One Finest Quality Gentleman's Silk Umbrella—To the Cheesemaker having the best-finished and most stylish-looking Cheese on exhibition in Class II.—H. E. Donnelly, Straffordville.

One Finest Quality Gentleman's Silk Umbrella—To the Buttermaker having the neatest and most attractive exhibit of Butter in Class III.—Strathroy Creamery, Strathroy.

One Finest Quality Gentleman's Silk Umbrella—To the Buttermaker having the neatest and most attractive exhibit of Butter in Class IV., Sec. I.—C. A. Davies, Guelph.

NOTE.—The winners of the special prizes offered by the J. B. Ford Co. must be regular and exclusive users of Wyandotte Dairymen's Cleaner and Cleanser. No special Cheese or Butter required.

By the Marschall Dairy Laboratory, Madison, Wis., manufacturer of Marschall's Rennet Extract and Color; Maclaren Imperial Cheese Co., Ltd., Woodstock, Ont., and DeLaval Co., Ltd., Peterboro, Ont., and Montreal, P.Q., Canadian Agents: Gold Waltham Watch, value $25.00, 17-Jeweled Movement, 25-Year Guaranteed Case—To the Cheesemaker securing the highest score on Cheese (except Stiltons) made with Marschall's Rennet.—Ben F. Howes, West Monkton.

NOTE. No special cheese required.

By Parke, Davis & Co., Walkerville, Ont.: $90.00 in Cash—$20.00 to the Cheesemaker securing first prize, and $10.00 to the Cheesemaker securing second prize on September White Cheese made with Curdalac, exhibited in Class I, Sec. 1.—C. J. Donnelly, Lambeth.

$20.00 to the Cheesemaker securing first prize, and $10.00 to the Cheesemaker securing second prize on September White Cheese made with Curdalac, exhibited in Class I, Sec. 2.

$20.00 to the Cheesemaker securing first prize, and $10.00 to the Cheesemaker securing second prize on Flat Cheese made with Curdalac, exhibited in Class V, Sec. 2.—J. T. Donnelly, St. Thomas.

NOTE.—No special cheese required.

By the Western Salt Co., Limited, Courtright, Ont., N. A. Leach, Manager: One barrel Purity Cheese Salt—To the Cheesemaker securing the highest score on September White Cheese, Class I, Sec. 1.—C. J. Donnelly, Lambeth.

One barrel Purity Cheese Salt—To the Cheesemaker securing the highest score on October Colored Cheese, Class II, Sec. 2.—H. E. Donnelly, Straffordville.

One barrel Purity Dairy Salt—To the Buttermaker securing the highest score on fifty-six-pound box Creamery Butter, Class III or IV, Sec. 1.—Jno. R. Almont, Silverdale.

One barrel Purity Dairy Salt—To the Buttermaker securing the highest score on twenty-one-pound Creamery Print, Class III, Sec. 2.—H. McGenn, Belmont.

NOTE.—No special butter or cheese required.

By the DeLaval Company, Limited, Peterborough, Canada: One Cheese Tier—To the Cheesemaker securing the highest score on September or October White Cheese, Class I, Sec. 1, or Class II, Sec. 1.—F. C. Eastman, Arkona.

One Cheese Tier—To the Cheesemaker securing the highest score on September or October Colored Cheese, Class I, Sec. 2, or Class II, Sec. 2.—H. J. Neeb, Tavistock.

One Cheese Tier—To the Cheesemaker securing the highest score on Cheese exhibited in Class I or Class II.—F. C. Eastman, Arkona.

One One-Pound Butter Printer—To the Buttermaker securing the highest score on butter exhibited in Class III, Sec. 2.—H. McGenn, Belmont.

One Butter Tier—To the Buttermaker securing the highest score on butter exhibited in Class IV, Sec. 1.—Ontario Creameries, Ltd., London.

NOTE.—No special cheese or butter required.

By the Sharples Separator Co., Toronto: $15.00 in Cash—$8.00 to the Cheesemaker securing the highest score, and $7.00 to the Cheesemaker securing the second highest score on 10-1-lb. prints Whey Butter, made during the month of October, from Whey Cream skimmed with a Sharples Separator.—1st, C. J. Donnelly, Lambeth; 2nd, Whyte Packing Co., Brockville.

NOTE.—Special Whey Butter required.

By the Imperial Bank of Canada: A Silver Cup—To become the property of the Cheesemaker securing the highest score, three times, or twice in succession, on two cheese; one cheese either white or colored, exhibited in Class 1 and one cheese either white or colored, exhibited in Class II. In awarding this cup the scores of the two cheese securing the highest score in Classes I and II (belonging to the same exhibitor) will be added. In case of a tie, settlement is to be left with the judges. Won in 1910 by J. E. Stedelbauer; won in 1911 by R. A. Thompson; won in 1912 by D. Menzies; won in 1913 by R. E. Hastings; won 1914 by Mrs. O. Cuckow; won 1915 by J. K. Brown; won 1916 by P. Callan; won 1817 by H. W. Hamilton; won 1918 by C. J. Donnelly; won 1919 by H. E. Donnelly.—C. J. Donnelly, Lambeth.

NOTE.—No special cheese required.

By the Toronto Produce Exchange: A Silver Shield—To become the property of the exhibitor of Butter (except 1-lb prints and 14-lb. boxes) at the Winter Dairy Exhibition who shall receive the highest score three times or twice in succession. Won 1917 by R. A. Dennis; won 1918 by J. R. Almont; won 1919 by C. A. Davies.—John R. Almont, Silverdale.

NOTE.—Cheese without a bandage shall be considered unfinished, and shall be scored off for finish accordingly.

Cheese on exhibition may be paraffined.

All one-pound print butter (except Whey Butter, which must be branded as such), on exhibition must be wrapped in plain wrappers.

All October butter, including Whey Butter, must be sent to London Cold Storage by November 11th.

By The Canadian Salt Co., E. G. Henderson, Windsor, Ont.: $25.00 in cash—To the Cheesemaker securing the highest score on cheese (except Stiltons) to be divided as follows:—1st, $10.00, F. C. Eastman, Arkona; 2nd, $8.00, H. J. Neeb, Tavistock; 3rd, $7.00, W. Hargraves, Atwood.

$25.00 in cash to the buttermaker securing the highest score on butter exhibited in any class (except whey butter).—1st, $10.00, Jno. Almont, Silverdale; 2nd, $8.00, H. McGenn, Belmont; 3rd, $7.00, Ont. Creameries, Ltd., London.

By W. A. Drummond & Co., Toronto, $6.00 in cash to the buttermaker securing the highest score on 56-lb. box butter, Class III, Sec. 2, or Class IV, Sec. 1.—Jno. R. Almont, Silverdale.

$4.00 in cash to the buttermaker securing second highest score on 56-lb. box butter, Class III, Sec. 2, or Class IV, Sec. 1.—Ontario Creameries, Ltd., London.

Special prizes given by Viking Rennet Company of Canada, 489 St. Paul Street West, Montreal, Que.:

One gallon Viking Rennet to every one of the nine winners of Association prizes in Class I, Sec 1, immaterial whether "Viking" brand was used or not.

One gallon Viking Cheesecolor to every one of the nine winners of Association prizes in Class I, Sec. 2, immaterial whether "Viking" brand was used or not.

One gallon Viking Rennet to every one of the nine winners of Association prizes in Class II, Sec. 1, immaterial whether "Viking" brand was used or not.

One gallon Viking Cheesecolor to every one of the nine winners of Association prizes in Class II, Sec. 2, immaterial whether "Viking" brand was used or not.

Mr. Herns: I want to refer to one point in connection with the referee's work. When we started the grading work, in order to get the system going, that seemed to be one of the easy ways to get started together with grading by sample. Last summer so much referee work had to be done by Mr. Scott that it really took more of his time than he should have devoted to it; because had the creameries sent in the samples to the grading stations, then all the grading would have been done there, and not at the warehouse where the butter was received. I am not offering any objection to the dealers asking that the butter be refereed, I presume that the quality justified their decision, but I would like to point out that we have got to the parting of the ways and we have either got to turn the whole of the grading system over into a plan of refereeing and spend our whole time at that or we have to discard that line of work almost entirely, and devote our time to grading butter by sample at the grading station, if the dealers and the creamery men want the butter graded. It is simply impossible, if we are going to extend the work, to follow two methods. If we are going to continue this grading system for a series of years and make it a permanent proposition, it seems to me we have reached a time when we ought to adopt one system or the other. Mr. Scott has already stated that he does not think refereeing work alone will ever be entirely satisfactory; it might be fairly satisfactory if every churning was numbered, or we could pick out a box from each churning from a shipment of one hundred boxes, and grade on that basis. If we are going to do more grading let us decide on one plan, and let the creamery send the sample to the grading station, and have the score card sent back and you can use that as a basis upon which to sell the butter. On the other hand, if you want to have the whole of the butter sold on a referee basis, then we can prepare for that line of work, but personally I do not think that will ever be satisfactory to the dealer, the creamery man or the producer.

Mr. Medd: The Dairy Conference held at Ottawa a little over a year ago recommended that pasteurization be standardized at 170° and held for ten minutes, and the results of very many experiments have proven that there has been no reaction by the Storch test in butter pasteurized at that temperature. I would suggest that Western Ontario butter be pasteurized at that temperature, and that that be recognized as the standard. Another thing that I think is very important in the matter of pasteurization is recontamination. Utensils will have to be kept perfectly clean, also sterilized, because there is a possibility of recontamination if things are not kept in perfect cleanliness at the factory. I think no creamery should put up butter in 56-lb. boxes. There should be something done to make a uniform box of say, 50 lbs. The 56-lb. box is one that requires a lot of reckoning that is British in its system, and I think we should have a Canadian system of 50, 100 and so forth. The use of second-hand boxes should not be encouraged at all; we should use new boxes. For local trade and odd prints, possibly they could use the boxes to advantage again, because they would soon be emptied, but 56-lb. boxes of solids going into cold storage should never be put in second-hand boxes. In regard to cream test scales, the matter of cream testing is one thing the creamery man is up against with a number of patrons all the time, and I think perhaps this is work the instructors might do, in that they should be qualified to inspect the scales at the creameries on each visit. They should carry with them scales that they know are correct, and by making a test on the scales while there they can find out if the creamery scales are in proper condition. The same plan might also be followed with regard to the moisture test scales.

Mr. Herns: The instructors already carry moisture test scales, but they have no authority to test the cream test scales, that authority is only given by the Inland Revenue Department: therefore we could not inspect and state that the scales were correct. We may know they are correct when they work out with the weight which we carry, but that does not mean that they have been legally inspected.

Mr. Medd: They are a very delicate scale, and they easily get out of order, and the creameryman might not know it. I was one of the first to use cream testing scales in the Province of Ontario, and only by comparing with the scales or weights that the inspectors carry with them am I able to ascertain whether mine are correct.

Mr. Herns: We can go that far, but we could not say the scales have been officially inspected.

A Member: I would like to have a word on that second-hand box. Many of them have come under my observation, and the dissatisfaction they are causing is greater then ever before. You cannot tell, in most cases, whether butter in 56-lb. boxes is going to be put in storage or be exported, or for what purpose.

Mr. James Donaldson, Atwood, drew the attention of the Convention to the fact that the British Ministry of Food for two years, up to August, 1920, bought all the cheese and butter products in Australia and New Zealand. In 1918 the price was 19¾c., and in 1919 it was 20 and 21c., against Canadian cheese in Montreal at 23c. When I was put on that committee I was biased against Mr. Ruddick myself, in the 1917 transaction, but when I came to understand affairs, I have to take my hat off to Mr. Ruddick and back him up, for, as the farmer representative, he backed me up in every way he possibly could. I do not wish to claim any undue credit, but I think it was actually due to Mr. Ruddick and myself that the dairy farmers, in the cheese industry alone, put $2,000,000 into their pockets in 1918 by the extra cent we got for them in Montreal. We fought all afternoon for it, we had it referred back to the British Ministry of Food, and tied up the cheese industry in Ontario for ten days, and we got that cent, but we had to compromise on that.

Further facts bearing on this subject will be found in the addresses of Dr. Ruddick and Dr. Robertson.

DAIRY ADVANCE.

GEO. A. PUTNAM, DIRECTOR OF DAIRYING.

The Department of Agriculture desires to get your views and co-operation on certain features of work which I will present to you this morning. We appreciate very much the co-operation of the Dairymen's Association of Western Ontario, it being an important factor in making the efforts of the Department effective. Government officials are helpless in their efforts towards improvement in quality without your co-operation. We are the servants of the people, possibly more than ever now that we are civil servants in a People's Government. We would like to see a larger number of producers take a continuous active interest in the work of your Association; and to that end may I suggest for the consideration of your Association and the farmers generally throughout Western Ontario, the advisability of branching out and holding special meetings for manufacturers and owners, also special meetings for the producers, making those meetings feeders for your convention. Your effort is so essential to the success of the biggest industry in this province that I think you should aim to reach out a little further and get the united and continuous support of all dairy sections in Western Ontario.

The business is worthy of more getting-together and united action. Officials can accomplish little without that co-operation which embraces not only the producers but the makers, the owners of factories, and the dealers. Dairying has become a most diversified industry, and we can increase this $85,000,000 business of Ontario to $200,000,000. Canadian cheese occupies a strong place in the markets of the world, but is still capable of development and improvement. Our butter situation is another question, but with your co-operation can be made as secure as the cheese business. Last year something like 24,000,000 pounds of butter was made in Western Ontario, but this expansion without better quality is dangerous. High prices have been received for dairy products all along the line, but those high prices were based upon our export trade, and we must produce, in Ontario, large quantities of butter equal to the best produced this year. During the past season we produced a limited quantity of the best butter we ever produced. We also produced a lot of as poor butter as we ever produced, and we want to get away from it as far and as quickly as possible.

Let us have as our main objective improvement in the raw material, which, after all, is the only foundation upon which we can build solidly and permanently. We have issued a circular on the care of Cream on the Farm (No. 21) which we are prepared to furnish in any quantity for distribution among the producers.

Do not forget the importance of cooling and cleanliness in the production of the raw material. You may talk about pasteurization and grading, and all other efforts, but unless you have the right sort of raw material you are not going to reach the point you are aiming at—a high-class finished product.

One of our aims must be *profitable* production, and in connection therewith I would like to supplement what Prof. Toole told you yesterday of the campaign for the eradication of the scrub bull, an accomplishment which will do much to insure greater profits.

If you are to establish your cheese and butter industry on a permanent basis, you should insure, so far as it is possible for you as an Association to insure, that the makers receive proper remuneration for the work they are doing. We can never build up a permanent successful dairy industry in this Province unless we make it worth while to the maker—worth while to the extent that first-class men will be attracted to the profession and retained.

Monetary returns to the farmer must be in keeping with the cost of production; dairying is not, as some of our city cousins would lead us to believe, a philanthropic work. In the first place, the raw material should be paid for on the basis of its quality, if we are going to give that stimulus to the industry which it should receive.

You are not in dairying for the purpose of supplying dairy goods to the people of this country to maintain their health, but you are in it for the money you are making out of it. I wonder how long the producers of milk are going to allow the pooling system to continue? You, as an organization, have already expressed yourselves regarding the Dairy Standards Act. I take it for granted that you are still of the same mind. The Minister of Agriculture is interested in agriculture in general, but he is especially interested in dairying. He recognizes that dairying is the backbone of successful agriculture in Ontario, and he desires that your Association continue to co-operate with the Department in furthering the interests of all lines of dairying. If you have suggestions to offer regarding the Dairy Standards Act, or any other legislation or regulations that are to be introduced, he will gladly welcome the same. The injustice of the pooling system is magnified as the price of dairy products advances. It is for the producers to say how long the injustice of pooling shall be continued.

Then, so far as high grade butter is concerned, the grading of cream is essential if efficiency is to be secured. This is a matter which rests with the manufacturers and producers.

It has been very difficult, as Mr. Herns has demonstrated to you, and as Mr. Scott has said, for us to carry on butter grading with any degree of satisfaction, when the men who are going to extra trouble and expense in caring for cream receive no recognition in dollars and cents for it; they have had some satisfaction in the knowledge that they have produced cream of first-class quality, but we are in hopes that they will receive adequate recognition by way of advanced prices.

The indications are that we are going to accomplish something in the grading service this year, but if quality does not receive recognition in dollars and cents this season, surely the creamerymen and producers of this country will get together and formulate a plan whereby recognition will be given to those who are producing the high quality goods.

The Minister of Agriculture was very sorry not to be able to meet with you and has asked me to convey his regrets. He is very much interested in dairying, and recognizes it as the one industry in Ontario upon which we must depend to a large extent to create a favorable balance in trade. He is prepared to give all government assistance necessary to properly develop this industry. The assistance given will depend to a large extent upon the co-operation and assistance of the various interests concerned. He is anxious for honest criticism, and still more anxious for helpful suggestions whereby we can improve our instruction work in the Dairy School, through the instructors and by literature. You can depend upon progressive action by the Department of Agriculture along these lines in the best interests of all concerned, and the producer, the backbone of the industry, will not be overlooked. Let us have your co-operation and make 1920 the record year for quality in Ontario dairy products.

REPORT OF CHIEF DAIRY INSTRUCTOR AND SANITARY INSPECTOR FOR WESTERN ONTARIO, 1919.

F. HERNS, LONDON.

I beg to submit my thirteenth annual report. The work of dairy instruction and inspection together with the butter grading service was carried on along similar lines as in previous years. Instructors attended the April meeting at the O.A.C., Guelph and the June meeting in London, at which time plans for the work of the season were completed. There are so many problems dealt with by the instructors during the course of the season that it is impossible to give details in a report of this kind. Only a brief summary is possible.

CHEESE INSTRUCTION.

FACTORIES. One hundred and thirty-eight factories, eight of which made butter and 10 other milk products, received 329 full day visits and 433 call visits by the five cheese instructors.

MILK SUPPLY. Ten thousand seven hundred and twelve patrons, of which number 8,041 were strictly cheese patrons, supplied milk to these factories. The estimated average per cent. fat in the milk for the season was 3.33 per cent. (.02 per cent. less than in 1918). The estimated average loss of fat in the whey for the season was .226 per cent. (.014 per cent. less than 1918.) Seventy-eight patrons were visited in connection with milk defects.

QUANTITY OF CHEESE, 1918. There were 19,038,788 pounds of cheese manufactured in Western Ontario in 1918. The average number of pounds of milk required to make one pound of cheese was 11.33. The average price per pound of cheese was 22½ cents. This is slightly less pounds of milk to make one pound of cheese and is one cent greater average price per pound than in 1917.

JUNE OUTPUT, 1919. Following the suggestion made last year relative to the June output for the current year to be used as a basis upon which to estimate production for the balance of the season, it was found that the June output was 3,692,924 pounds, which is 653 boxes of 80 pounds each less than in 1918.

QUALITY OF CHEESE. Warm weather came on during the latter part of May and troubles developed earlier than usual, but on the whole the general quality of the cheese, especially the fall make, was well maintained. Some factories had considerable trouble at times to produce first grade cheese and required special assistance from the instructors, and owing to the long period of warm weather the instruction service was in constant demand. The fall make was short owing to cheese milk being diverted into other channels, such as market milk, etc. There is still room for improvement, especially at some factories, and with the frequent changing of operators, some of whom are comparatively inexperienced in factory management, and since a number of the old experienced cheesemakers have, during the past several seasons, left cheesemaking work for some other business which they believe to be more remunerative, it becomes a difficult problem each year to maintain the quality at all factories and to prevent losses to the producers. It is to be hoped that a number of the good men who have gone out of the business in recent years may return to cheesemaking, but in the meantime we have to do the very best possible to assist the younger makers to turn out a first-class quality of cheese at all times. The factory labor situation has been relieved somewhat, and as more normal conditions, in regard to the cost of manufacture, return, it should mean more encouragement for every one engaged in the cheese business.

USE OF RENNET. Only four factories used rennet substitutes during the past season.

MILK SEDIMENT TEST. Two thousand two hundred and thirty milk sediment tests were made and the special cards to which "discs" were attached showing the visible impurities in the milk and covering brief instructions for proper care were used as well as large numbers of circulars on "Care of Milk," "Care of Cream" and "Cow Testing." Lactometer tests made were 17,189.

Factories having ice cool curing room, 12; septic tank, 17; paying for milk by test, 28; pasteurizing whey, 46; turn cheese in the hoops, 71.

WHEY BUTTER. Seventy-four factories skimmed the whey; 22 factories made whey butter and 54 factories sold whey cream. With the present high price of milk fat the skimming of the whey is no doubt an economic advantage. However, there must be no slackening of effort to produce the very finest quality of cheese, at the same time turning out a quality of whey cream or whey butter that is a credit to the factory and will maintain the market under normal conditions for this kind of product.

In this connection it is again urged to skim a rich cream, pasteurizing if practicable, and in any case cooling immediately after separating to a low temperature. The cream should be shipped with low acidity.

All utensils and piping with which the whey comes in contact must be kept strictly sanitary. Heating the whey to 155 degrees is necessary, whether or not skimming is practised, if yeasts and many other objectionable flavors which may be transmitted through the whey are to be kept in check and also as a precautionary measure against the transmission of disease germs to live stock.

It is also suggested that if purchasers of whey cream would make a distinction in price between first and second grade cream there would be a financial incentive to produce only first grade cream. If such is not done it may be a slow process to get all the whey cream of first grade quality. It is in the interests of not only the milk producers but the factory men as well to establish a market for first grade whey cream, in order that it may be known and recognized as a high grade rather than a low grade cream.

NEW MILK CANS. Six hundred and forty new milk cans were purchased by producers, which is an exceptionally good showing in the face of high prices for tin. There are now comparatively few old, rusty, insanitary cans as was the case a few years ago.

There are still some factories that are not kept as clean and tidy as they might be. I venture to predict that when the scarcity of first-class factory help is entirely relieved it will become more difficult for men of careless habits to secure positions in the dairy business. It must be realized that the general standard of sanitation in all dairy operations is being gradually raised and that all successful factory operators are building up a reputation on this basis as well as upon the quality of the goods which are produced.

PROSECUTIONS. Eighteen cases of milk deterioration were dealt with, the patron in each case pleading guilty to the charge and fines of from $10 to $100 was imposed by magistrates.

ANNUAL AND DISTRICT MEETINGS. The instructors and myself attended 62 meetings of cheese, creamery, powdered and condensed milk factory patrons. The total attendance was 3,485.

EXPENDITURE FOR IMPROVEMENTS. A total of $81,845 is estimated as the expenditure for cheese factory improvements. Of this amount $10,000 covered the cost of two new cheese factories; $32,400 was expended in whey butter plants and $39,445 on general improvements.

CHEESE FACTORY INSTRUCTION, 1919.

Instructor and Group.	Factories visited.	No. of patrons.	No. of full day visits	No. of call visits.	No. of patrons visited.	No. of curd tests.	No. of lactometer tests.	No. of Babcock tests for adulteration.	No. of sediment tests.	Factories skimming whey.	Factories paying by test.	Factories having ice cool curing room.	Factories pasteurizing whey.	Whey fed at factories.	Average per cent. fat in milk for season.	Average per cent. fat lost in whey for season.	New factories	Cost of new factories	Estimated expenditure for other improvements.	Total Expenditure
																		$ c.	$ c.	$ c.
LISTOWEL— R. A. Thompson	29	2,198	63	101	9	...	3,297	40	.....	18	11	3	15	1	3.37	.223	1	6,500 00	1,150 00 *9,350 00	17,000 00
STRATFORD— G. M. McKenzie	29	2,451	90	99	14	5	5,871	232	45	15	12	8	16	4	3.35	.234	1	3,500 00	7,530 00 *7,550 00	18,580 00
INGERSOLL & WOODSTOCK A. E. Gracey	28	1,888	63	116	20	100	2,340	225	662	15	7	1	4	0	3.22	.229	0	....	3,740 00 *6,700 00	10,440 00
SIMCOE & BRANTFORD— Geo. Travis	19	1,476	31	41	14	20	3,100	625	1,200	8	0	0	0	0	3.4	.23	0	....	1,925 00 * 700 00	32,625 00
LONDON— Fred Boyes	33	2,699	82	76	21	10	2,581	166	323	18	11	0	11	1	3.3	.215	0	....	25,100 00 *8,100 00	33,200 00
Totals and Averages †	138	10,712	329	433	78	135	17,189	1,288	2,230	74	41	12	46	6	3.33	.226	2	10,000 00	39,445 00 *32,400 00	81,845 00

* Whey butter plants....	$32,400 00
General improvements.....	39,445 00
2 new factories...........	10,000 00
	$81,845 00

† Includes 8 creameries and 10 other plants

CREAMERY INSTRUCTION.

One hundred and thirty-two creameries received 267 full day visits and 106 call visits. Mr. McMillan and Mr. Smith each visited 50 creameries, giving 243 full day visits and 30 call visits. Mr. Rickwood visited 13 creameries in the South-Western Peninsula, giving 24 full day visits and 21 call visits. Mr. Scott looked after the 11 Toronto creameries, giving them 55 call visits. Eight creameries were, by reason of location, placed in the cheese group. Six new creameries were opened. With the present staff it is impossible to give this large number of creameries the attention that should be given especially at a time when rapid changes are taking place in creamery conditions and methods.

SHORT ICE SUPPLY. The mild winter was responsible for a short ice supply and a number of creameries, in order to meet the condition, put in a mechanical refrigeration plant. Many creameries were short of ice, and warm weather coming on early did not improve the situation. Several creameries were obliged to haul artificial ice long distances at high prices, while others secured a supply through railroad shipment from ice companies. A somewhat difficult position was created for cream cooling both on the farm and at the factory as well as cold storage at the latter. Butter quality was thus difficult to maintain.

A number of creameries are deserving of credit for adopting better methods, and other creameries maintained the standard of previous years, but unfortunately some creameries turned out a greater quantity of second grade butter than the market can absorb, if conditions were normal, and such creameries will eventually find it an economic necessity to improve quality, not only because of the financial loss to which they may be subjected but also on account of the injurious effect this kind of butter is having on the general standard of quality of the butter of the Province.

QUANTITY OF BUTTER. Western Ontario creameries manufactured in 1918 23,758,696 lbs. of butter. With the addition of 661,086 lbs. of butter made at cheese factories gives a total production of 24,419,782 lbs. This is an increase over 1917 of 1,330,474 lbs.

PATRONS. Forty-six thousand nine hundred and twenty-seven patrons supplied cream to the creameries; the average per cent. fat in the cream was 29 per cent.

MOISTURE IN BUTTER. The average moisture content of 436 samples of butter was 14.98 per cent.; 67 samples contained over 16 per cent. of moisture and were taken from 35 creameries.

SALT. The average salt used and retained in the butter as indicated by 498 tests made was 5.29 per cent. and 3.25 per cent. respectively.

TESTING CREAM. One hundred and two creameries used the metric scale for weighing cream samples for testing. Next season every creamery will, in accordance with the Cream Test Act, be expected to use a cream test scale. Of the 22 creameries not using the scale during the past season the claim made was that a metric scale was on order, but they were unable to get delivery until late in the season.

COOLER. Seventy creameries used a cream cooler.

PASTEURIZING. Twenty-eight creameries pasteurized the cream all or a part of the time. Seven creameries used a pure culture. Four creameries graded the cream for churning purposes, and one claimed to pay patrons according to grade. Nine creameries have a septic tank for the disposal of wash water.

NEUTRALIZE THE CREAM. Ten creameries reduced the acid on very sour cream during warm weather before pasteurization.

Patrons Visited. Forty-one patrons were visited by the creamery instructors with good results in the improvement of the cream.

Mechanical Refrigeration. Twenty-nine creameries now have mechanical refrigeration. Seventy-nine creameries collect the cream on routes. Forty-four creameries have cream shipped to them and some collected on routes.

Loss of Fat in the Buttermilk. One hundred and seventy tests were made and the average loss of fat was estimated to be .2 per cent.

Expenditure for Improvements. Six new creameries were built at a cost of $64,000, and $145,515 was the estimated expenditure in general improvements. A portion of this expenditure was incurred in the installation of mechanical refrigeration plants.

Cream Buying Stations. There were over 200 cream buying stations in operation during the past season; no inspection or instruction was given. Owing to the many different methods of purchasing cream it is a problem to know just what regulations, if any, should be recommended for these buying places to cover (*a*) sanitary conditions, (*b*) equipment, (*c*) methods of testing. At some places the local grocer buys the cream instead of, as in former days, dairy butter: he tests and pays cash for it. Others operate a regular buying station and make a business of purchasing cream. Some creameries send out competent drivers with a motor truck, stopping at certain points on the route, the producers bring the cream to him and the driver tests and pays for the cream. In other cases the cream is collected and shipped from the station direct to the creamery where it is tested and checks issued. It would seem that there should be some systematic supervision of these buying stations, with the object of protecting producers in the cream test, and also to make reasonably sure that every person testing cream, commercially, is competent. With the intense competition for cream, and so many different plans of purchasing and handling cream, it is a very difficult matter to suggest any uniform method for grading and paying for cream by grade in so far as these buying places are concerned.

May I again point out in this connection that we are gradually turning towards an export trade in creamery butter, and it cannot be too strongly urged upon every one engaged in the industry the absolute necessity for a concerted effort towards quality improvement, and this applies equally well to our home market.

Butter Grading Service. The butter grading service was again operated with one grading station located at the Municipal Abattoir, Toronto. forty-one creameries signed agreements to send in butter samples for scoring. Five creameries dropped out of the grading, while nine new creameries began grading for the first time. The system followed was the same as last year, that is to say, each creamery forwarded to the grading station a 14-lb. box sample of each churning. These samples were scored and a copy of the score sent to the creamery. We were very much encouraged by the fact that several creameries took advantage of the grade score on which to sell their butter; these creameries received a premium in price when sold on grade.

The grader also refereed a large number of cases where disagreements arose between the original creamery seller and the dealer as to the quality and was requested to do so by both parties. This referee work is entirely separate from the regular grading service, and, I am inclined to think, should be discontinued this coming season, and that we should confine the grading work entirely to the grading of butter on samples as they are sent in to the grading station, and make every effort to secure the co-operation of the producers, creamerymen and dealers to sell and purchase the butter on grade score card based upon the score.

YEASTS AND MOULDS IN BUTTER. Mr. Lund continued to examine samples of butter sent to him from the grading station. He was able to give us much valuable information through this work, and I might point out several instances where difficulties in manufacture were corrected when visiting the creameries with this information to work from.

Mr. Lund will deal with this question of yeast and mould count briefly, and as you have already noticed, he has been good enough to place an exhibit downstairs which I am sure will be found interesting and instructive. We wish to express our sincere appreciation of the work Mr. Lund has done in this connection and we hope that he may be given the necessary time and encouragement to continue the work this coming season.

It would, I think, be an excellent thing for the creameries if we were in a position to make salt and moisture tests of the butter samples that are sent in to the grading station and return this information to the creamery with the score card.

PASTEURIZATION OF CREAM. Early in 1919 we made a special effort to encourage more creameries to adopt pasteurization. Several creameries that pasteurized the cream for the first time showed a steady improvement in uniform quality. It cannot be too strongly urged that proper pasteurization of the cream is a big factor in quality improvement. The temperature recommended is 170 degrees holding for 10 minutes. Pasteurization, of course, costs money but there is every evidence to indicate that the creameries that build up a reputation during the next few years upon uniform quality and long keeping butter will, in the final analysis be the winners. It would seem advisable to have regulations covering minimum temperature at which cream must be heated to brand butter as "Pasteurized."

CIRCULARS ON "CARE OF MILK AND CREAM AND COW TESTING." Each year thousands of these circulars are printed and sent out to the cheese factories and creameries to be distributed among the patrons as a means of improving the quality of raw material and also in encouraging cow testing.

SECOND-HAND BUTTER BOXES. The use of second-hand 56-lb. butter boxes may be justified in the shipment of print butter, from an economic standpoint, but for "solid pack," especially if the butter is destined for the export trade, such boxes are a doubtful commodity and may prejudice the purchaser against the butter. With more normal conditions in connection with box supply it would seem to be in the best interests of the trade to gradually cut down the use of second-hand boxes to the vanishing point. In any case there should be some regulation which would insure the removal of all identification marks before the boxes are used the second time in order to avoid confusion as to the identity of the creamery from which the butter is shipped.

CARE OF CREAM TEST SCALES. Every precaution should be taken to keep these scales in good order by keeping them in a proper place where they will not be exposed to moisture, thus resting the bearings. They must be in good working order at all times if the cream samples are to be weighed correctly for testing. There should also be some central point where these scales may be sent for repairs and adjustment.

CREAM IMPROVEMENT THROUGH THE USE OF ICE AND COOLING TANK. For many years this matter has been continually before the creamerymen and producers, and the importance of putting up ice and using cooling tanks as a means of improving the quality of the cream has been frequently emphasized. The circular

CREAMERY INSTRUCTION, 1919

Creamery Instructor and Group.	No. of Creameries visited	No. patrons.	No. patrons visited.	No. full day visits.	No. call visits.	Average per cent. fat in cream.	No. tests made for moisture in butter.	Average per cent. moisture.	No. samples showing over 16% moisture.	No. creameries these samples taken from.	No. tests made for salt in butter.	Average per cent. salt used.	Average per cent. salt left in butter.	No. creameries using scales (Metric)	No. creameries using cooler.	No creameries pasteurizing the cream.	No. creameries using culture.	No. creameries grading cream.	No creameries having septic tank.	Average temperature of storage.	No. creameries neutralizing the cream.
D. McMillan, Stratford	50	25,448	....	110	15	28.6	273	14.76	42	21	261	4.92	3.05	43	32	19	3	2	1	46.4	5
J. B. Smith, Brampton	50	13,769	....	133	15	29.	225	15.	24	13	200	5.25	3.	45	34	4	4	....	7	52.	3
G. Rickwood, Essex	13	2,710	41	24	21	29.6	38	15.18	1	1	37	5.7	3.7	7	4	1	....	1	1	50.7	......
Jno. H. Scott, Toronto	11	5,000	....	....	55	.....	......	.....	......	......	.....	....	....	7	....	4	....	1	....	....	2
Total	124	46,927	41	267	106	29.	536	14.98	67	35	498	5.29	3.25	102	70	28	7	4	9	49.7	10
Visited by cheese instructors	8																				
	132																				

Expenditure	New Creameries (6)	$64,000 00
	General Improvements	145,515 00
	Total	$209,515 00

Value, butter made, 1918	$10,673,920 49
Total lbs. butter made, 1918	23,758,696 lbs.
Gain over 1917	1,261,324 "

on "Care of Cream" sent out by the Dairy Branch gives specifications for building such tanks, and the Federal Dairy Department have complete literature on the methods of putting up ice and cooling cream by the tank method. Models of a cooling tank have been shown for a series of years at Fall Exhibitions, on Better Farming Trains, etc., and no doubt advantage has been taken in many cases to build such tanks. However, if it were possible to have these tanks manufactured wholesale, bought by the creameries and sold to their patrons at cost, it should be the means of getting the tanks used more universally. Even if ice was not available, by placing the cream cans in these tanks and surrounding them with cold water, changing the water occasionally or allowing it to pass directly through the tank, the insulation recommended in the building of the tank should assist in keeping the contents cold. Any efforts on the part of the creamerymen in this connection should mean improved cream quality and better butter.

The Federal Butter Scoring Contest. A full report will be given of this work and no time need be taken for discussion in this report except to state that the Competition is of educational value and to urge that the 1920 Competition be well supported.

REPORT OF COMMITTEE ON RESOLUTIONS, 1920.

The following resolutions were presented and adopted.

(1) Resolved, that we, the members of this Association desire to express our appreciation of the hearty reception given the members and delegates by the citizens of the City of London. We also desire to thank the Mayor and Council for their kindness in furnishing the free use of the Masonic Hall for the Convention and for the Dairy Exhibition.

(2) We desire to express our appreciation of the addresses given by the various speakers which have contributed to the success and educational value of the Convention and we extend to them our sincere thanks for their assistance.

(3) The thanks of the members of this Association are hereby tendered to the Canadian Salt Co., Windsor, through their general manager, Mr. E. G. Henderson, for the very handsome badges presented by the Company to the members of this Association.

(4) We wish to thank the press for the excellent reports published by them of this Convention and express our appreciation of their assistance.

(5) The thanks of this Association are hereby tendered to the Toronto Produce Exchange; The Canadian Salt Co., Windsor; Heller & Merz, New York; C. Richardson & Co., St. Mary's; R. M. Ballantyne, Ltd., Stratford; Geo. E. Booth, Ingersoll; D. H. Burrill & Co., Little Falls, New York; The J. B. Ford Co., Wyandotte, Mich.; The Western Salt Co., Courtright, Ont.; The DeLaval Co., Ltd., Peterboro'; The Parke Davis & Co., Walkerville, Ont.; The Imperial Bank of Canada; W. A. Drummond & Co., Toronto; Sharples Separator Co., Toronto; Marschall Dairy Laboratory, Madison, Wis.; and the Slawson Co., Ingersoll; for the special prizes donated for the Dairy Exhibition.

(6) That this Association is in sympathy with the plan for the butter grading service put into effect by the Dairy Branch of the Ontario Department of Agriculture and believe, if continued, this will stimulate and encourage a permanent grading system for creamery products.

(7) That as dairymen we are under great obligations to both the Provincial and Federal Departments of Agriculture for assistance rendered the dairy industry and we wish to tender our sincere thanks and express our appreciation of the work done by these Agricultural Departments in promoting the Agricultural interests of the Province and of the Dominion.

(8) We wish to express appreciation to the officers and directors of the Canadian National Exhibition, Toronto, for the splendid refrigerated space provided in the Dairy Building, C.N.E., this past season. With this space available the exhibit of Ontario dairy products may be continued from year to year and thus impress upon the consuming public the food value of milk and its products. In this connection, we wish also to express thanks to the Dairy Branch of the Ontario Department of Agriculture for providing such an excellent exhibit of Ontario dairy products.

(9) This Association wishes to offer every encouragement to the Dominion Butter Scoring Contest and to the various Dominion and Provincial Officials and the Judges who assisted in making the work of special educational value, and we are pleased to know that this contest will be continued this year with additional special features which no doubt will increase the interest taken in the contest.

(10) We wish to express appreciation of the action of the Dairy and Cold Storage Commissioner, through the Market Branch, in sending out regular market letters and telegrams and respectfully suggest that this plan be continued and that the News Letter also be included.

(11) This Association wishes to go on record as approving the formation of the National Dairy Council of Canada and desires to assist in any way possible the educational policy outlined by the Council. In this connection we respectfully recommend the co-operation of the various Provincial and Dominion Dairy Departments.

(12) This Association wishes to go on record as supporting in any way possible the campaign which the Federal and Provincial Departments of Agriculture intend to carry out in the elimination of the scrub bull.

(13) Whereas, the use of second-hand butter boxes for packing solids is leading to future difficulties in the way of misunderstood markings and prejudice possibly regarding quality;

Be it resolved that so far as possible the use of such boxes be discontinued and that some regulation be enacted to insure that all previous markings are removed before the second using.

(14) Whereas, pasteurization is recommended for all cream for butter making;

Be it resolved that this Association go on record as recommending a temperature of 170 degrees for ten minutes, and also that some regulation be enacted defining the minimum temperature at which cream may be pasteurized, to be branded pasteurized butter, or a certificate of grade attached to graded pasteurized butter.

Moved by W. G. MEDD, seconded by MR. LAWRENCE, that the report of the Resolutions Committee be adopted. Carried.

THE OUTLOOK FOR THE DAIRY INDUSTRY IN CANADA.

W. W. Moore, Ottawa.

In the absence of Mr. Ruddick I shall give you a short talk on some features of the work carried on by the Dairy Division of the Dominion Department of Agriculture.

Last May we commenced sending out telegraphic market quotations covering the prices of butter and cheese at Montreal and Toronto on Mondays and Fridays of each week. We sent these telegrams in the shape of night letters to at least two officials of the Dairy Associations in each of the nine Provinces of Canada. These were pre-paid by the Department. We also sent the same night letter to any firm or individual in any part of Canada who asked for the direct service, for which they were willing to pay the cost of the telegram. I may say that the list of those receiving the telegrams directly was a very considerable one, and we have received many expressions of satisfaction for that service. I believe this part of the telegraphic quotation service will be largely increased next year.

On Monday of each week we issued the Dairy Produce Market Report which contained a review of the butter and cheese markets in Montreal and Toronto for the previous week, and also of the New York market.

In this letter we also included any items of international importance that came to our attention, and that were timely. We found throughout the summer that we were getting a lot of material—while it was not exactly of a market character and could not be used in the weekly letter—it would be of value to the dairymen of this country, and we decided, in October, to send that out in the form of a Monthly News Letter.

The reason we selected Mondays and Fridays for the telegraphic reports was mainly due to the fact that in Montreal, the Quebec Agricultural Co-operative Society held an auction sale in the Board of Trade building for butter and cheese on those days, and by means of that auction sale we were enabled to get the actual prices at which butter and cheese were sold by the producers to the wholesale buyers and merchants. The Agricultural Co-operative Society in the Province of Quebec has been in existence for a number of years, and has been remarkably successful. The butter consigned to this Society in Montreal, goes immediately into cold storage, is weighed and graded by the Provincial grader, and on Mondays and Fridays at half-past twelve, the manager meets the buyers of the principal firms in Montreal and asks for bids for each grade, and in a few moments the sale of the butter is concluded. Only when, in the opinion of the manager, the prices offered are not sufficiently high, is the butter held over until the next sale or sold privately in the meantime.

In Toronto we had much more difficulty in securing fair quotations, but through the courtesy of the Secretary of the Toronto Produce Exchange, we were enabled to get on Mondays and Fridays a report of the sales that took place on those days. In Montreal we have our own representative attend each sale that is held by the Society.

We decided to confine the Dairy Market Report, that is issued weekly, to one sheet, with the exception of a second sheet on which we gave the receipts of cheese in Montreal from week to week, and the export by water from Montreal to Europe. We thought it better to confine the first part of the report to one sheet, because these days busy men do not want to wade through a lot of non-essentials before they get the information they are after.

In the Dairy News Letter, we asked the co-operation of the dairy leaders in the various Provinces to send us each month dairy news and notes that would be of inter-provincial importance. We want, in this way, to develop a unity of feeling among the dairymen in the various Provinces of Canada and get them interested in what the dairymen in the other Provinces are doing. We met with gratifying response from the Provincial Officials, and the last letter, which appeared on the 10th of this month, contained information from six out of the nine Provinces. We hope to continue and extend that feature of the Dairymen's Letter.

Those of you who are not receiving the Dairy Markets Reports, issued weekly, or the Dairy News Letter, issued monthly, if you send your name and address to the Dairy Commissioner, Ottawa, we will be glad to put you on our list, and the same with the telegraphic quotations when we resume them next spring. Our reports from the market in New York are taken from the Dairy Produce Price Column, which is issued and published by the *New York Produce Review.* We check that up with the reports from the Bureau of Markets of the United States Department of Agriculture. They issue daily reports covering the butter and cheese market in Chicago, New York, Boston, Philadelphia and San Francisco, and we find the reports very accurate.

THE EXPORT CHEESE TRADE.

A very significant and important feature of our export cheese trade during the past season was the foothold we obtained in continental Europe, due to a keen demand that developed in August and September from Belgium, France, Switzerland and, to a less extent, Scandinavia. The bulk of the shipments from Canada were consigned to Antwerp, but a great deal of the cheese was distributed over Central Europe. For instance, we know that several shipments were loaded on cars at Antwerp and sent by rail to Roumania. Antwerp was also a distributing point for Germany and Switzerland. This trade was developing nicely and all our surplus cheese would have been taken care of had the exchange situation not intervened and practically stopped this trade during the late fall months. However, up to the end of December, we shipped to Belgium 18,421,866 lbs.; to France 2,304,118 lbs.; and to the United States, but intended for export to continental Europe, 5,514,390 lbs. Our total exports of cheese in the nine months ended December 31st, 1919, amounted to 104,158,012 lbs., valued at $30,199,297. We hope this year to see this trade with the continent of Europe revived and continued as the people there are large consumers of cheese. It may surprise you to learn that in 1914 Denmark consumed over 12 lbs. of cheese per head of population. The next largest consumer per capita was the United Kingdom with about 10 lbs., followed by France and the Netherlands with 8 lbs., Norway with 7 lbs., Switzerland with 5¼ lbs. and Italy with 5 lbs. In this country our consumption of cheese per head is slightly in excess of 3 lbs., while the United States consumes less than 4 lbs. I have not the figures showing the per capita consumption in Belgium, but I believe it is approximately the same as France. Belgium's imports of cheese for more than ten years previous to the war exceeded 25,000,000 lbs. annually, practically all from France, Holland and Switzerland. Prior to the war Italy, Switzerland, France, Holland, Sweden, and Norway were all large exporters of dairy products, but in 1919 all these countries were importers. It is not likely there will be a market for Canadian cheese in Italy as that country produced in 1914 about 560,000,000 lbs., comprising more than 30 varieties of cheese, and she was one of the principal cheese exporting countries of the world. In normal times France imported larger quantities of cheese than she exported, but the war had a serious effect on her cheese trade and it is possible that her imports will be still greater and her exports less than was the case prior to the war. It is difficult to say just what market there will be in Germany for cheese as the kinds in greatest demand there are the small soft cheese which are manufactured at home. It is possible, in view of the shortage of fats and essential food stuffs in that country, that there will be a market there for the Cheddar type of cheese for the next year or two.

THE EXPORT BUTTER TRADE.

There was considerable expansion in our export butter trade this season, the exports for the nine months ending December 31st, 1919, amounting to 12,694,150 lbs., valued at $6,878,317. In quantity, this was an increase of 456 per cent. over the same period in 1914. The largest quantity (7,865,441 lbs.) went to the United States, the second largest quantity (2,304,207 lbs.) to the United Kingdom and the third largest quantity (1,668,195 lbs.) to Belgium. The balance (856,307 lbs.) went to France, Newfoundland and various other countries.

For the coming year, we are told by the best authorities there will be a great shortage of butter in Europe. Siberia, which prior to the war shipped large quantities of butter to Great Britain, will only produce enough for her own needs. There will be a short production in Australia this season due to drought.

The speaker, after presenting statistics and outlining the effect of Exchange and Food Control on the Canadian export trade, expressed the view that the prospects for the export trade were exceedingly bright.

THE DOMINION EDUCATIONAL BUTTER SCORING CONTEST, 1919.

GEO. H. BARR, CHIEF DAIRY DIVISION, OTTAWA.

PLAN. The Dairy and Cold Storage Commissioner, Ottawa, made arrangements with the Provincial Dairy Commissioners and Superintendents of Dairying to select four creameries in each province that would manufacture and ship to Montreal in the months of May, June, July, August, September and October, one 14-lb. box of butter. British Columbia selected only three.

The method of manufacturing the butter was left entirely in the hands of the creamerymen and the provincial authorities. Blank churning records were furnished each creamery to be filled in and forwarded with the samples. Upon arrival in Montreal, the butter was placed in cold storage at from 12 to 15 degrees temperature. A few days after the samples were received, they were scored by Mr. P. W. McLagan, Montreal, Mr. J. B. Muir, Ingersoll, and the writer, and were re-scored for flavor by the same parties each succeeding month until October. The August, September and October samples were again re-scored for flavor on December 17th.

The objects of the Contest were:

(1) To ascertain if it is possible to make as fine butter in one province as another.

(2) To find out, if possible, the best method of handling the cream and churning it to make the finest and best keeping quality.

(3) To try and establish a type of butter which would meet the requirements of the export trade and also be suitable for the best markets in Canada.

(4) To promote a healthy rivalry between the different provinces in making the finest quality of butter.

(5) The Contest would indicate to some extent the effectiveness of the dairy educational work being carried on in each province.

To what extent has the Contest worked out these problems? We think the question of making a uniformly high grade of butter in each province has been definitely settled. Note the uniformity in the total score on the best samples from each province:

British Columbia	97.1 points.	Quebec	98.5 points.
Alberta	98.0 "	New Brunswick	96.8 "
Saskatchewan	98.5 "	Nova Scotia	98.0 "
Manitoba	98.0 "	Prince Edward Island	98.0 "
Ontario	96.5 "		

The minimum score for "Specials" was 41 and every province has made some Specials. We can, therefore, say that the finest butter can be made in every province.

ACID IN THE CREAM. The Contest shows that the very finest butter can only be made from clean, sound-flavored cream. The keeping quality of the butter made from cream with .35 per cent. acid is as good as that made from cream with less than .2 per cent. acid, but .35 per cent. is about the limit to make the finest flavored butter with long keeping qualities.

The churning records indicate that 15 samples of butter were made from cream in which the acid had been neutralized. The average acidity before neutralizing was .615 per cent. and after pasteurizing was .262 per cent. The deterioration in flavor in these samples between the first score and the last re-score was 1.57 points, which is only .42 points greater than the average deterioration in all the pasteurized samples and 2.49 points less than in the samples made from unpasteurized cream.

PASTEURIZATION. It has been generally admitted that pasteurizing the cream improves the keeping quality of butter. The Contest bears out this fact. But pasteurization will not produce special grade butter from sour poor flavored cream. High pasteurization (160 to 185 degrees), has given exceptionally good results in the keeping quality of the butter.

Samples made from cream pasteurized to a temperature of 160 degrees and held for from 10 to 20 minutes have held their flavor equally as well as those from cream heated to 180 degrees. We would, however, recommend the higher temperature to be absolutely certain that the work is effective.

The percentage of samples made from pasteurized cream which passed from Special and No. 1 Grades into No. 2 and Off Grades between the first scoring and the last re-score, was 17 per cent., and from unpasteurized cream 100 per cent.

The deterioration in flavor during the same period was almost three times as great in the samples made from unpasteurized cream as in those made from pasteurized cream.

The tendency of pasteurizing is to produce a mild flavor in the butter. Many people do not like butter of this character. They prefer butter with some taste to it, but the re-scores show that the samples with this mild flavor are keeping better than those with the higher or more pronounced flavors, and the creamerymen and butter dealers will do well to note this fact.

THE STORCH TEST. This test is based on the principle that milk and cream produced normally contains certain deoxidizing ferments which are known as peroxidase. If, when a few drops of an "indicator" and a "reagent" are added to a sample of milk or cream, an immediate color reaction occurs (milk and cream, indigo-blue; whey, violet-red), then the sample has not been heated above a certain critical temperature, or it may not have been heated at all. If the sample turns a pale grey in color, either immediately or within half a minute's time after the addition of the reagents, then it has been previously heated to the "border line." If the sample remains white or develops a very pale violet-red tone by the addition of the reagents, then it has been heated to a temperature sufficiently high to destroy or to render inactive the peroxidase ferment.

In reporting the Storch Tests in this Contest, three terms were adopted: "No Reaction" when the sample remained white; a "Light Reaction" when the sample turned a light grey color; and a "Strong Reaction" when the sample turned a dark blue color.

The following brief statement shows the value of the test in relation to the keeping quality of the butter.

One hundred and thirty samples gave "No Reaction" and at the last re-score, eight of these samples or 6.07 per cent. were placed in Off Grade for flavor; the churning records indicate that five of the eight samples were made from cream in which the acid had been neutralized and two were made from unpasteurized cream and no record as to the acidity or condition of the cream was given. It has been found that a very high acidity on the cream will affect the Storch Test results, and I am not prepared to say what effect neutralizing the acid in the cream has on the keeping quality of butter.

Thirty-one samples gave a "Light Reaction" and at the last re-score, 11 of these samples or 35.5 per cent. were placed in Off Grade for flavor.

Twenty samples gave a "Strong Reaction" and at the last re-score 50 per cent. were placed in Off Grade for flavor.

These results would indicate that the Storch Test is a fairly reliable test to show the keeping quality of butter and can be used to a very great advantage in commercial grading.

UNIFORM TYPE. The type of butter that pleased the scorers best and, in fact, everybody else who saw the samples, was that which came out on the trier like a piece of wax and showed little or no moisture on the butter, or on the back of the trier; texture, close and smooth; color, even and about a straw shade; and a salt content of from 1.5 to 2 per cent. The butter from the Western Provinces was usually of a closer character than that from Eastern Canada and showed less *free* moisture. Many of the eastern samples showed too much free moisture and the color was often uneven. Nobody wants mottled or streaky butter and there is no excuse for this defect. More working would overcome the defects in color and would also eliminate the defect of too much free moisture.

TEXTURE. Many of the samples were brittle or short in texture. Such butter has the appearance of being churned at too high a temperature, coming soft and then washed with very cold water. An effort should be made to overcome this defect. The butter from the Maritime Provinces is inclined to be open or loose in texture; more working would improve it. A close smooth waxy texture is what is desired.

SALTING. The amount of salt added to the butter at churning, as shown by the churning records, varied from 1.5 to 8 per cent. The percentage of salt in the butter, as shown by the salt test, varied from .8 to 4.3 per cent. The churning records for the 15 samples which scored the highest for flavor had an average of

2.73 per cent. salt added at churning and 1.4 per cent in the butter. If the salt test is reliable, there is either a very great difference in the percentage of salt expelled in working the butter, or there are very grave errors made in estimating the quantity of salt added to the butter.

Manufacturing a uniform type of butter all over the Dominion is no doubt a big problem, as it depends almost entirely on workmanship and it is no small undertaking to get about one thousand men churning and working the butter in the same manner, but the Contest shows that there were a good many samples from every province which scored nearly perfect for workmanship.

Dairy Educational Work. The proof of effective dairy educational work is shown in the quality of the finished products. Although only four creameries from each province are competing they will to a greater or less extent reflect the character of the work which is being done in the balance of the creameries in the province, and the dairy authorities in each province would do well to watch the successful competitors in this Contest and put into practice the methods that are producing the finest butter.

Summary.

(1) The very finest butter can be produced in every province in the Dominion.

(2) Excellency of workmanship would appear to have more to do with the production of fine butter than either climatic conditions or geographical position.

(3) The finest butter can only be made from clean, sound-flavored cream.

(4) Cream should not have more than 3.5 per cent. acid if the best butter is to be made.

(5) Results indicate that pasteurizing good cream to temperatures from 160 to 185 degrees will ensure good keeping butter; also that sour and poor flavored cream pasteurized to the above temperature will have very much better keeping qualities than butter made from the same grade of unpasteurized cream.

(6) The deterioration in the flavor of butter made from unpasteurized cream was nearly three times as great as in the butter made from pasteurized cream.

(7) The Storch Test we consider a valuable test to indicate the keeping quality of butter.

(8) The addition of about 3 per cent. salt to the butter at churning will in most cases produce butter, as far as salt is concerned, that will suit the best trade in Canada and also the British markets.

I hope that you in Ontario will take a better place next year in the contest; you cannot afford to take the same place you did this year. You will start next spring even with every other province in the Dominion, and I hope at the end of the season, you will win out better than you have to-day.

CHEESEMAKING EXPERIMENTS AT THE O.A.C. IN 1919.

Prof. H. H. Dean, O.A.C., Guelph.

Strictly speaking this is not an "address," but rather a summary of results obtained with reference to investigations in the manufacture of Cheddar Cheese during the season of 1919, at the Dairy Department, O. A. College, as requested by your Secretary. The work of making cheese was done by T. J. McKinney, Cheesemaker. Nearly all the cheese were scored by Mr. Frank Herns, Chief Dairy

Instructor for Western Ontario, and Secretary of this Association, to whom we are indebted for his help and co-operation.

The supply of milk for the work came chiefly from about a dozen farms near the College; only a small portion came from the College herd, hence it represents average milk as delivered to cheese factories in Western Ontario. The milk was delivered about 9 a.m. each day, when each farmer's milk is weighed and sampled for fat-testing with the Babcock test on the monthly composite plan. From the weigh-can the milk runs into a large vat, where it is thoroughly mixed, then divided as a rule between two smaller vats, having a capacity of about 800 pounds each. These two vats are fitted with steam connections and mechanical agitators. The curds are dipped into a divided curd sink, milled with a motor-driven, knife-curd-mill, and pressed in galvanized steel hoops in a gang press having a steel-spring head for continuous pressure. The cheese are pressed for about twenty hours, then removed to the curing-room, or to an ice-cold-storage. The temperature of the former ranges from 65 deg. to 85 deg., and the latter from 40 deg. to 50 deg. F. When paraffined, the cheese were dipped in a special tank in which the wax is melted and kept hot by steam. This was done when the cheese had been made four days.

PARAFFINING CHEESE PAYS.

In order to determine whether or not it pays to paraffine cheese, the question was studied from two viewpoints—(1) difference in weight between similar cheese paraffined and not paraffined at the end of one, two and three weeks; also one, two and three months; both flat and ordinary sized cheese were tested; lots were kept in a curing-room and similar lots in an ice-cold-storage; (2) effect on the quality of the cheese as determined by scoring or judging, when made from six weeks to three months.

The chief results were:

The flat paraffined cheese during three weeks, lost in weight 1.21 per cent. in cold storage and 1.71 per cent. in the curing-room. Those not paraffined, under similar conditions, lost 2.69 and 3.84 per cent. respectively in cold storage and curing-room. In cold storage the saving by paraffining was 1.48 per cent. and in the curing-room 2.13 per cent. At the end of three months the saving on "flats" by coating with wax was 1.52 per cent. in cold storage and 2.07 in the curing-room. On large cheese the difference was not so great, averaging .79 per cent. in three weeks, and 2.11 per cent. in three months in cold storage. In the curing-room, the gain was 1.11 per cent. in three weeks; and in three months, 1.03 per cent.

As regards quality of the cheese, there was not much difference. The flat cheese in cold storage, and not paraffined, averaged 36.75 points out of 40 for flavor and a total of 92.12 out of 100; while the paraffined lots averaged 36.5 for flavor and a total score of 91.12. The lots paraffined were not quite so good in quality, though the difference was not great.

The flat cheese held in the curing-room for three weeks, then moved to cold storage, averaged 36.37 for flavor in the paraffined lots, with a total score of 91.49, while those not paraffined averaged respectively 36.25 for flavor and 90.67 in total score. In other words, the flat cheese paraffined at the end of four days, then placed in cold storage at a temperature of about 45 deg. F., were not quite so good as the lots not coated and placed in cold storage in four days after making. Those held in the curing-room for three weeks and then moved to cold storage gave the opposite results, or were slightly better in quality as a result of paraffining.

In the case of the large cheese paraffined and held in cold storage, and also for lots in the curing-room, the flavor and general quality was slightly better as compared with similar cheese not paraffined. These results are not concordant, and probably indicate that paraffining has not much effect on the quality of the cheese, what difference there is, being in favor of the lots paraffined in most cases. The chief advantage in dipping cheese in hot wax when about a week old is the saving in shrinkage. If done too soon after making there is danger of "soft rinds" on the cheese.

Effect of Temperature of the Milk at the Time of Adding Pepsin and Rennet for Coagulation.

The standard temperature of milk for "setting the vat" in Canadian Cheddar cheesemaking, is 86 deg. F. It is well-known that the temperature of milk at the time of adding the coagulating material has a marked effect on the time required for coagulating the vat of milk ready to cut with the curd knives. Other things being equal, the lower the temperature of milk at the time of adding rennet or pepsin the longer the time required for coagulation; the higher the temperature of the milk, up to at least 100 deg. F., which is about optimum temperature for the action of rennet and similar ferments, the shorter the time required for milk coagulation. Temperatures of 86 deg. and 90 deg. F. were used in the tests, chiefly for the purpose of noting effects on quantity of coagulating material required, and yield and quality of cheese.

Briefly, the results were:

1. Three ounces of pepsin solutions added to 1,000 pounds milk at a temperature of 90 deg. F. required 7.25 minutes longer to coagulate a vat ready to cut than did four ounces of pepsin added at 86 deg. F. There was also an excess loss of fat in the whey, averaging .032 per cent. higher reading on the Babcock test bottle by using the higher temperature.

2. The yield of cheese averaged .8 pound higher per 1,000 pounds milk by setting the vat at 90 deg., as compared with setting at 86 deg., but the cheese scored an average of .4 less out of 100. The difference was chiefly in texture of the cheese.

3. Two and one-half ounces of rennet at 90 deg. coagulated vats of milk in the same average time as did three ounces of rennet added to milk at 86 deg.; there was no difference in the loss of fat in the whey from the two lots; the high-setting temperature produced an average of .35 pound more cheese per 1,000 pounds milk, and the cheese scored an average of .25 point lower—chiefly in color and texture.

4. Comparing rennet used at the rate of three ounces per 1,000 pounds milk at 86 deg. F., with using pepsin solutions at the four ounce rate, the latter required an average of eight minutes longer to coagulate the vat; the whey tested an average of .037 per cent. fat higher on the double-neck Babcock bottle; the yield of cheese was .11 pound higher; and the cheese scored one point lower.

In a word, the higher setting temperature produced more cheese, but the quality was not quite so good as when the vats were "set" at the standard 86 deg. F.

Rennet, Pepsin and Mixtures of Rennet and Pepsin Compared for Coagulating Milk.

A number of rennet substitutes were compared with pure rennet and mixtures of rennet and pepsin. These tests showed that rennet alone gave better results in yield and quality of cheese than did any of the substitutes tested. It was also observed that the substitutes lose their strength much more quickly than does rennet under similar conditions, consequently a cheesemaker should not stock large quantities of pepsin, but rather purchase in smaller quantities and have it as fresh as possible from the manufacturer. It is also necessary to have the milk at a higher degree of acidity at the time of coagulation when using pepsin as coagulating material, compared with rennet—say about one, one-hundredth of a per cent. acid higher. For instance, if setting at an acidity of .18 per cent. with rennet, then vats set with pepsin should have about .19 per cent acid.

NEUTRALIZING HIGH ACID MILK FOR CHEESEMAKING.

Frequently during hot weather milk arrives at the cheese factory with higher acidity than can be made into fine cheese. The cheesemaker resorts to various methods of overcoming this unfavorable condition, such as setting the vat at a lower temperature, cooking to a higher temperature, washing the curd, etc. In order to see what effect there would be if the acidity were reduced by adding milk-lime to high acid milk, it was intended to conduct several tests during the past season, but lack of time prevented making more than one test. The results are interesting. Milk containing .23 per cent. acid was divided equally between two vats. One of these was reduced to .19 per cent. acid by adding milk-lime, then both were coagulated with rennet. The losses and yield of cheese were similar in both lots, but the cheese made from the vat "neutralized" scored one point higher in flavor.

It would not be wise to draw "hard and fast" conclusions from one experiment, and the work will need to be repeated, but this one test indicates a method of overcoming the bad effects on the quality of cheese where milk is received "overripe" or having too high an acidity, to make into fine cheese.

RE-MADE MILK CHEESE.

One test only was made by using "re-made" or "re-constituted" milk for making cheese. One hundred and three pounds of the milk were made from approximately 9.5 pounds skimmilk powder, 4.2 pounds saltless butter, and 89.3 pounds of water, which were emulsified in special apparatus, then cooled, and made into cheese the following day. The yield of cheese was at the rate of 12 pounds per 100 pounds of the "re-made" milk. The cost of the raw material was 46.5 cents per pound cheese. The cheese was of inferior quality. As a commercial proposition, the system does not appear to be practicable.

In my judgment, we need to do everything that is possible for us to do or our cheese trade is going to slip away from us. We were told that the consumption of cheese in Canada is only about three pounds per capita; that should be doubled so that we may have a better market for our cheese at home.

Q.—What is the amount of lime used in 1,000 pounds of milk?

A.—We added sufficient lime to reduce the acidity from .23 to .19. You have to know how much acidity your milk has and what you want to reduce it to, and then make a mathematical calculation to know the amount of lime to add. There is a table already worked out for that purpose, and I will send it to you if you wish it.

The retiring President, MR. FRANK BOYES, introduced MR. W. G. MEDD, Exeter, as President-elect, who expressed deep appreciation of the honor done him.

REDUCING ACIDITY AND ITS EFFECT.

W. H. SPROULE, O.A.C., GUELPH.

Before going into the subject of reducing acidity of cream for buttermaking and stating any conclusions from experimental work, I wish to make a few introductory remarks which will not only have a close bearing, but will involve some explanation, which will justify the experimental work under question.

The manufacture of butter to-day is a science and an art that requires a great deal of skill and intelligence in meeting the ever changing conditions which are taking place. In this country, creamery butter is made almost entirely by three different classes of manufacturers. First, the large centralizing creamery where cream is shipped to a central point and there manufactured into butter; second, the small individual creamery where cream is delivered locally, and lastly, the co-operative creamery which manufactures the raw material produced by its own members and others.

The large creameries cover a wide range of territory. They make it possible for hundreds of farmers to carry on dairying in parts of the country where there is not enough cream to maintain a local plant. They increase the production of butter, and providing all other things are equal, the greater the amount of butter which can be made in one place, the lower will be the cost of manufacture, hence, the greater the price that can be paid to patrons.

From time immemorial butter has been made from cream that is more or less sour. If the acidity is high and is not reduced it will make a butter that appears cheesey or with high curd content and oftentimes a scorched flavor in addition to a high loss in the buttermilk. This does not injure the food value nor does it make the butter less healthful, but it does make the flavor undesirable and lessens the keeping quality.

The souring of cream is a problem which economically effects both the manufacturer and the producers. I firmly maintain that we cannot encourage and educate the producer of cream enough to produce cream of high quality and care for it sufficiently. Every creameryman would be pleased to get cream in a sweet condition so it could be pasteurized and manufactured into butter economically without having to reduce acidity, but where cream is carried over great distances this is beyond the hand of the farmer and it is a case almost of making the very best of the raw material at hand.

I feel, therefore, that this is a phase of our dairy work which deserves some attention in the way of scientific experiment, and, like all other investigational work, it requires time in both the practical and scientific sides before any definite statements can be made. I have, however, made certain observations from a practical application of what knowledge I have of buttermaking which point toward more or less definite conclusions, but I do not wish to make any positive assertion until we are absolutely sure, otherwise more harm than good might be the result.

In experimental work of this nature one is more or less handicapped in not having the services of a chemist to determine the action which any alkali might have on the character of the fat. However, I think that this is only a minor factor and firmly believe that reducing the acidity of the cream has little, if any, effect on the character of the fat, although it would be a satisfaction to know if it has any.

An American dairy authority states, for example, that reducing acidity by the use of an alkali will not remove rancidity. That in the first place, cream seldom.

if ever, is rancid and that further, we are only reducing the acidity to a lower point, and since the lactic acid in the cream is stronger than the butyric acid, all the lactic acid would have been neutralized before the butyric acid would be attacked by the lime at all. So it is therefore obvious that reducing the acidity of the cream has nothing whatever to do with the removal of rancidity.

Furthermore, in the use of limewater we are adding a milk constituent to reduce acidity as we very often do a lactic acid culture to acidulate or to ripen the cream. The same cream, when sweet, contained enough alkalinity to keep it in sweet condition, but owing to the multiplication of lactic organisms the acidity predominated, to what extent, depending upon the conditions under which the cream has been kept. This condition is a natural subsequence of events, the knowledge of which is obvious to every creameryman.

My experimental data on this subject was conducted at the Lambton Creamery Company, Petrolia, during June, July and August of last summer. We conducted some twenty-seven experiments and kept a complete churning report of every churning. The experiments were carried on under ordinary creamery conditions. The churnings would range in size from 1,300 to 1,500 pounds, and when the cream would arrive at the creamery from day to day the acidity would range from .3 to .9 per cent. We always divided one lot of cream having the same acidity into two lots, and after reducing the acidity in one lot to approximately .4 per cent, pasteurized both. We found it advisable not to reduce the acidity lower than .4 or .45 per cent. owing to any later reaction of the lime and also to the natural decrease in acidity due to pasteurization. To what extent this decrease is, we cannot tell, and it is, therefore, liable to offset the use of a table which would be very useful in determining the amount of lime water to use. It is claimed, however, that this drop in acidity, brought about by heating, is caused by the expulsion of volatile acids, by a more intimate union of lime water and lactic acid, and also by expulsion of carbonic acid.

The cream was pasteurized at 170 deg. F. for ten minutes, and the average difference of loss in buttermilk in favor of the neutralized cream was .15 per cent. Although the difference in this particular case was small you will agree with me that on heating very sour cream we have a coagulation of the casein which embodies the fat, thereby giving a high loss. When the acidity is reduced this does not occur.

The butter was scored during the summer by Mr. Scott, Provincial Grader, and then again on November 15th, 1919, and the manner in which the neutralized butter kept in storage in comparison to the non-neutralized, both in my own experiments and also in the College experiments was very interesting. The average score for flavor of the neutralized butter when fresh was 39.5. During the storage period it depreciated in flavor to 38.6, while the non-neutralized when fresh scored 38.4 and decreased in storage to 37.1.

It will be noticed that in the first place the butter made from neutralized cream of identically the same quality and percentage acidity as the non-neutralized gave a higher score when fresh and did not depreciate in flavor as quickly as did the other. This result held particularly good in the case of very sour cream between .65 and .9 per cent. In addition to this the loss in buttermilk was considerably reduced where the acidity was lowered and, as in the case of keeping quality, this was more marked in very sour cream, in which case the casein would be precipitated in heating up. I would strongly emphasize that in the case of very sour cream not to reduce the acidity much below .4 or .45 per cent., because there is a danger of imparting a lime flavor to the butter. Also when cream has been reduced too low, it has been found to curdle, which would prolong the period of churning and probably result in a high curd content in the butter.

One of the main advantages of reducing acidity is that it eliminates, to a marked extent, the development of metallic flavor in butter, which is so often the case in the pasteurizing of very sour cream, and it is undoubtedly one explanation for the resultant better keeping quality of the butter.

"NOTES ON YEAST AND MOULD COUNTS OF CREAMERY BUTTER, 1919."

T. H. Lund, B.S.A., O.A.C., Guelph.

A study of the yeast and mould content of creamery butter, work upon which was commenced in 1918, has been carried on again during the past season on a more extended scale.

Yeast and mould counts of 285 different lots of butter have been made, samples being secured from the following sources:

Experimental churnings, Dairy Dept., O.A.C.	46
Provincial Butter Grading Station, per Mr. Scott	192
October entries, Dominion Scoring Contest, Montreal, per Mr. Barr	30
"All Canada" Scoring Contest, Winnipeg, per Mr. Gibson	9
Miscellaneous samples	8

Our object in carrying on this work has been to secure information on the following points:

1. Yeast and mould content of raw vs. pasteurized cream butter.

2. Efficiency of creamery pasteurization and extent of recontamination of pasteurized cream butter as indicated by yeast and mould counts.

3. Relation of yeast and mould content of butter to flavor and keeping quality.

4. Correlation, if any, between the yeast and mould counts of butter with the findings of the Storch test.

Eighteen Ontario creameries (14 pasteurizing, and 4 not pasteurizing) contributed 180 samples from different churnings from May to October, yeast and mould counts obtained being forwarded weekly by Mr. Herns, at London, who has passed them on to the creamery inspectors and to the creamery managers or buttermakers concerned.

From these counts we have been able to get a pretty fair idea of the yeast and mould content of Ontario butter as manufactured during the warmer months of the year.

The following 95 counts from ten creameries (two churning raw cream and eight churning pasteurized cream) will serve to illustrate the yeast and mould content of creamery butter as we have found it during 1919.

CREAMERY A. RAW

Date	Number	Oidium	Yeast	Penicillium
5- 9	2	480	18,000	10
5-16	4	300	3,500	10
5-20	5	400	3,000	5
5-31	11	1,500	6,000	0
6- 2	12	2,500	4,000	0
6-14	19	3,500	12,000	50
6-18	21	1,800	2,000	0
7- 5	31	1,600	14,000	0
7- 9	33	2,500	8,000	0
7-18	41	4,000	22,000	0
7-22	43	5,600	21,000	30
7-29	47	9,000	35,000	0
8- 9	54	20,000	38,000	0
9-23	79	10,000	45,000	0

CREAMERY D. RAW

5- 9	3	25	2,000	300
5-13	6	750	14,000	600
5-22	15	330	6,000	400
6- 2	27	5,000	15,000	3,000
6- 6	36	2,000	32,000	1,000
6-14	53	1,200	25,000	500
7- 7	94	16,000	55,000	0
7- 8	95	10,000	60,000	0
7-17	112	600	25,000	80
7-28	129	8,500	25,000	10
8- 4	139	2,000	170,000	50
8-10	150	800	110,000	10
10- 6	225	1,200	34,000	4,000

CREAMERY Q. PASTEURIZED

7- 4	20	0	550	2
7- 7	25	14	700	0
7-18	42	1	450	0
7-25	47	7	850	3
7-30	51	1	800	1
8-13	57	2	430	0

CREAMERY L. PASTEURIZED

6- 7	34	2	660	0
6-12	40	1	1,000	0
6-24	59	1	270	0
7-15	94	0	320	1
7-21	102	7	3,000	0
8- 2	121	42	1,200	0
9-27	188	0	220	0

CREAMERY P. PASTEURIZED

5-24	4	0	200	2
6- 9	13	0	520	4
6-26	20	0	50	120
7-17	24	0	2,500	12
7-26	27	4	9,000	50
8- 6	30	4	420	15
9-24	49	0	400	10
10- 3	51	0	310	0

CREAMERY K. PASTEURIZED

Date	Number	Oidium	Yeast	Penicillium
5- 9	62	1	420	1
5-27	88	9	1,000	30
5-30	102	10	350	20
6- 3	112	100	500	2
6-14	163	15	1,300	0
7- 4	262	60	5,000	0
7-15	321	10	700	0
7-18	343	300	1,400	0
7-21	354	210	2,600	0
7-30	399	48	760	0
8- 7	437	0	320	3
8-16	473	440	1,500	0
9-24	602	22	2,400	0

CREAMERY H. PASTEURIZED

5-12	90	0	3,300	0
5-17	95	1	7,400	0
5-22	99	0	5,200	0
6- 2	108	0	50,000	1
6- 9	114	2	18,000	0
6-18	123	210	8,000	0
7- 6	137	1	16,000	0
7-16	146	0	12,000	0
7-18	148	0	4,500	3
7-29	157	1	3,500	5
8- 1	160	0	19,000	0
8- 6	164	0	14,000	0
8-13	170	0	6,200	0
9-26	8	5	2,500	3

CREAMERY F. PASTEURIZED

5-25	1	15	40,000	20
6-11	16	2	20,000	0
6-19	23	0	21,000	0
7- 4	38	120	50,000	50
7-19	52	30	28,000	8
7-24	56	750	30,000	2
7-29	61	600	12,500	3
8-13	74	550	6,000	0

CREAMERY G. PASTEURIZED

6- 6	4	400	15,000	10
7- 3	14	1,000	22,000	0
7-27	35	150	14,000	0
7-31	39	1,300	8,000	20
8- 3	44	1,200	13,000	50
8-13	50	350	16,000	40

CREAMERY O. PASTEURIZED

5-14	22	1	200	0
5-27	42	60	3,500	10
5-29	47	60	12,000	5
5-31	53	2,000	2,000	0
7- 7	117	8,000	19,000	0
7-23	148	2,500	7,000	50

In the first place, we notice in creameries A and D, where pasteurization is not practised, that the yeast and mould counts run high. This is what we would naturally expect as no steps have been taken to destroy the large number of these organisms which we know are present in gathered cream. The effect of the warmer months on these counts is plainly visible, showing a marked variation in July and August from what occurs in May. Creamery D shows large numbers of Penicillium mould spores to be present: under favorable conditions of temperature and of moisture such butter is practically certain to go mouldy, particularly if the salt content is at all low. Such butter as this deteriorates rapidly in storage, but to what extent the large numbers of yeasts and moulds present are responsible is not definitely known.

One creamery (counts not included above) where the cream is warmed up to 120 deg. F. shows counts somewhat higher than these. The influence of such treatment upon the germ life in the cream seems to be stimulative rather than destructive, and we have no hesitancy in condemning the use of such a low temperature as scientifically unsound.

Turning to the other eight creameries where pasteurization is practised, or supposedly practised, the counts as a whole are considerably lower, as one would naturally expect, than those shown by creameries A and D. There is considerable variation, however, between counts obtained from the different creameries and also between those obtained from the same creamery at different times. The cause or causes responsible for the presence of these organisms in pasteurized cream butter, and for their varying number should be better known and understood by creamerymen.

The presence of yeasts and moulds in butter is due to one or both of two causes, namely: (*a*) inefficient pasteurization, that is to say, the yeast and mould germs in the cream are not all destroyed, and (*b*) recontamination, where efficiently pasteurized cream becomes inoculated after pasteurization by addition of small quantities of raw cream, by passage through unclean pipes, pumps, churns, etc., from dust and in other ways.

From examination of the butter alone it is impossible to determine to which of these two causes the counts are due; it is only by taking samples of cream at the creamery at different stages of the manufacturing process that we can find out definitely just where the trouble occurs. If the pasteurization is efficiently carried out and reinfection of the pasteurized cream prevented, the yeast and mould content of the butter should be nil.

High Oidium counts (over 1,000 per c.c.) such as seen in creameries G and O, would indicate that the cream was not pasteurized in the case of these particular lots of butter, or, if pasteurized, gross carelessness as to temperatures or to recontamination must have occurred. Such butter has no right to be classed as pasteurized cream butter when the work has been so inefficiently done.

High yeast with low mould counts may be due to either, or to both causes at times. As yeasts are fairly easily killed (145 deg. F. for 30 minutes), one should have no trouble in eliminating them from the cream. With a continuous pasteurizer yeasts and moulds are apt to slip by at the commencement and finish of the run: when starting up and closing down it is important to watch the temperature carefully to avoid letting only partly heated cream get by. It is equally important, for the same reason, that no marked drop in temperature occurs during the run. In vat pasteurization, dead ends of conductor pipes and large gates should be avoided as unheated cream is apt to become pocketed in them. Cream splashings on sides and covers should also be avoided as yeasts and moulds are apt to survive in these and later on be rinsed off and run into the churn and mixed with the yeast and mould-free cream. There should be no opportunity either, through leaky valves, for raw cream to find its way into the pasteurized cream.

The extent to which a churn may reinfect yeast-free cream with yeasts is remarkable, as the photographs on exhibition show, and the keeping of a churn in a bacteriologically clean condition is not the simple matter that many buttermakers suppose. In my opinion, a large part of the yeast content of these samples of pasteurized butter is due to contamination from yeast-infested churns. The care and cleaning of the churn in many creameries does not receive the attention it deserves. Conductor pipes and cream pumps are another source of serious contamination unless well cared for.

The relation of yeast and moulds in butter to flavor and keeping quality is a more difficult matter to determine, and our investigations on this point have not proceeded far enough to justify us in coming to any final conclusions at the present time. In a general way the work of the past year with Ontario butter has shown us that pasteurized butter containing large numbers of yeasts may, and often does, score up well when fresh, but that after four months in storage it will usually score lower than four-month old pasteurized butter containing fewer yeasts, which did not score quite so high perhaps as the high yeast content butter when first made. We have good examples of this in creameries Q, L and P, butter from these creameries usually holding its flavor well, while in the case of creameries F, G and O, marked deterioration in many cases has occurred.

It is hoped to continue work on this point during the present year in connection with the Dominion Scoring Contest, if satisfactory, co-operative arrangements with the Dominion Dairy Division can be made. Our facilities at Guelph and Toronto for the satisfactory prosecution of an investigation of this kind are limited, both by shortage of help and lack of funds, and it is in matters such as this where the Dominion Dairy Division can render us material aid.

The 30 counts of the October entries in the Dominion Scoring Contest show that creameries in other Provinces than Ontario are manufacturing butter containing large numbers of yeasts at times, while, on the other hand, some quite low counts have also been obtained. Butter from one B.C. creamery gave a count of two yeasts only per c.c., the next lowest count being from a whole-milk creamery in Quebec with a count of 140 per c.c. High yeast content butter among the October entries in many cases scored up well on flavor, two samples of pasteurized cream butter from Manitoba and P.E.I., each containing over 100,000 yeasts per c.c., scored 42.5 and 43 respectively, while two lots from N. S. and Quebec, containing 45,000 and 44,000 yeasts per c.c., scored 42.5 and 43. These four lots got the four highest scores, which fact is rather remarkable. Evidently there is something about yeasty butter, when fresh, which tickles the nostrils and palate of the judges, which fact is quite in line with our knowledge of wines, where the yeasts are responsible for the pleasant and desirable bouquet. In the case of wines we know that there are both desirable and undesirable varieties of yeasts, and there is no reason, to my mind, why this should not be so in the case of butter too, as far as its flavor and aroma when freshly made are concerned.

Counts of these 30 samples have been submitted to Mr. Ruddick. Whether it is his intention to publish them or not I do not know. Up to the present time no re-scores of these 30 October entries have been received by me, so I know nothing of their keeping quality so far.

With regard to the Storch tests of Ontario butter samples sent to the Grading Station at Toronto during the past year, practically nothing has been done. When the work was outlined in the spring it was the intention that Storch tests should be made. This, however, was found to be impossible, so the only data we have at present on this point is in connection with the 30 October entries in the Dominion Contest of which Storch tests were made at Montreal. With these 30 lots from different creameries no correlation between the yeast and mould counts and the findings of the Storch test could be found, that is to say, that a lot of butter containing large numbers of yeasts in many cases gave no reaction with the Storch test, while samples containing only a few yeasts gave strong reactions at times. I have no quarrel with the Storch test *per se*, but in its application to butter it fails to tell the whole story by any manner of means. If pasteurized cream butter is loaded up with yeasts, the creamery manufacturing it should certainly be so informed, but the Storch test alone cannot show when such a condition occurs.

In conclusion, I have to thank Mr. Scott for the efficient manner in which he has handled the Toronto end of this investigation, and it has meant a lot of extra work for him, and also Mr. Herns, your efficient Secretary, for his enthusiastic interest and assistance at all times.

THE DAIRY SCHOOLS

DAIRY SCHOOL, O. A. COLLEGE, GUELPH, SESSION 1920.

The Staff of Dairy Instructors was:

H. H. Dean, B.S.A.	Professor of Dairy Husbandry.
R. Harcourst, B.S.A.	Professor of Dairy Chemistry.
A. L. Gibson, B.S.A.	Lecturer in Dairy Chemistry.
D. H. Jones, B.S.A.	Professor of Dairy Bacteriology.
T. H. Lund, B.S.A.	Lecturer in Dairy Bacteriology.
C. E. Bingleman	Instructor in Cheesemaking.
T. J. McKinney	Instructor Hand and Power Cream Separators; also in Boiler, Engine, Piping, Soldering, etc.
D. McMillan	Instructor in Buttermaking and Icecream making.
J. Ross	Instructor in Milk and Cream Testing.
Miss Belle Millar	Instructress in Farm Buttermaking and Farm Dairy, Soft and Fancy Cheesemaking.

The Dairy School Session of 1920 was the most successful of any held at the O. A. College during the twenty-seven years it has been in existence. The attendance was large, the interest good, the class of students excellent, and the number writing on the final factory course examinations, the greatest we have had, numbering 56. A number of overseas returned men were in the class, many of them from the Provinces of Western Canada.

The registration by courses was:

Factory Course	67
Farm Dairy	23
Ice-cream and Soft Cheese	23
Cow-testing	28
Total	141

A new feature, introduced for the first time this year, was a practical Creamerymen's Conference, the last two days in March and the first day of April. This meeting was attended by the Dairy Instructors of Western Ontario and took the place of the Instructors' Course which had been held during previous years. The attendance numbered about one hundred and the interest was good throughout the sessions. Half the time was given to practical demonstrations in methods of pasteurizing, neutralizing and churning cream, and working butter, chiefly under the direction of the Creamery and Dairy School Instructors. Two sessions were devoted to discussions of problems interesting to creamerymen and butter manufacturers. A resolution was passed asking that a similar meeting and demonstration be given in 1921. We expect to arrange for this the latter part of the Dairy School Term, next year.

We are anticipating a new dairy building and much enlarged and improved courses for the classes of 1922. The present equipment is altogether too small and out-of-date for so great an industry as is dairying in the Province of Ontario. We are assured of the sympathy and hearty support of the present Honourable Minister of Agriculture in making the Dairy Department a strong feature at the College.

H. H. Dean,
Professor of Dairying.

O. A. College,
Guelph, May 7th, 1920.

EASTERN DAIRY SCHOOL, KINGSTON,

SESSION 1920.

OFFICERS AND STAFF.

Director—G. A. PUTNAM, B.S.A., Toronto.
Superintendent—L. A. ZUFELT, Kingston.

Staff.

L. A. ZUFELT	Dairy Lectures.
J. H. ECHLIN	Instructor in Cheesemaking.
W. G. GARDINER	Assistant in Cheesemaking.
J. A. CRAIG	Instructor in Buttermaking.
J. BURO	Instructor in Separators.
C. F. LINN	Assistant in Buttermaking.
G. H. BARKER	Instructor in Milk Testing.
W. T. CONNELL, M.D.	Bacteriology.
L. A. ZUFELT	Dairy Chemistry.

The registration at the Eastern Dairy School for 1920 was as follows:

Long Course, Jan. 12th, to Mch. 20th	33
Special Cheesemakers' Course	13
Special Buttermakers' Course	21
Instructors' Course, Mch. 22nd to 27th	16
Total	83

Eighteen students wrote on the final examinations, sixteen of whom passed on all subjects.

The special creamery course was again well attended and is proving one of the leading features of the School and has resulted in a marked improvement in the quality of Ontario creamery butter.

The special course for cheesemakers was not as well attended as was hoped, due largely to the prevalence of 'Flu, which was particularly bad at that time. We are in hopes it will prove more successful next session.

CREAMERY STATEMENT FOR THE YEAR ENDING DEC. 31ST, 1919.

Number of patrons		76
Butter manufactured		128,890 lbs.
Butter fat in cream		105,128 "
Percentage of over-run		22.6
Average price paid patrons per lb. of fat		65.6c.
Total receipts for sale of butter, etc.		$73,293 46
Revenue from creamery	$5,541 33	
Revenue from other sources	1,135 49	
Total revenue		$6,676 82

Ontario Department of Agriculture

ANNUAL REPORT

OF THE

LIVE STOCK BRANCH

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

Printed by
THE RYERSON PRESS.

To His Honour Lionel H. Clarke,

Lieutenant-Governor of the Province of Ontario.

I have the pleasure to present herewith for the consideration of Your Honour the Report of the Live Stock Branch of the Department of Agriculture for 1919.

Respectfully submitted,

Manning W. Doherty,

Minister of Agriculture.

Toronto, 1920.

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  Addresses: WM. JONES, 27; ANGUS A. WORLICH, 27; H. S. ARKELL 27

ONTARIO LARGE YORKSHIRE SWINE BREEDERS' ASSOCIATION 30

ONTARIO BERKSHIRE BREEDERS' SOCIETY 31

CANADIAN SHEEP BREEDERS' ASSOCIATION 32
  President's Address: W. A. DRYDEN 33
  Parasites in Sheep: DR. HADWEN 36

ONTARIO SHEEP BREEDERS' ASSOCIATION 40
  President's Address: GEO. TELFER 43
  Bounty for Wolves: Discussion 45

ONTARIO HORSE BREEDERS' ASSOCIATION 48
  Address: WM. SMITH, M.P. 50

ONTARIO CATTLE BREEDERS' ASSOCIATION 52
  Addresses: JOHN GARDHOUSE, 53; W. R. REEK, 55; WADE TOOLE, 56; F. R. MALLORY, 57; D. O. BULL, 58; A. G. FARROW, 59; Discussion 60

ONTARIO POULTRY ASSOCIATION 64

Annual Report of the Live Stock Branch
1919

To the Honourable Manning W. Doherty,

Minister of Agriculture.

Sir,—I hereby transmit the Annual Report of the Live Stock Branch for the year 1919. It contains the financial statement of the Ontario Provincial Winter Fair for the year 1919; report of Ontario Stallion Enrolment Board; report of co-operative shipments of pure-bred live stock; financial statements and lists of officers of the Live Stock Associations and addresses delivered at annual meetings of the Live Stock Associations.

Faithfully yours,

R. W. Wade.

Director.

ONTARIO STALLION ENROLMENT BOARD

Chairman .... Lieut.-Col. R. McEwen, London.
John Gardhouse, Weston.
F. C. Grenside, V.S., Guelph.
Peter Christie, Manchester.
Secretary .... R. W. Wade, Parliament Buildings, Toronto.

Ontario Provincial Winter Fair

Following are a number of comparative tables of attendance, gate receipts, and entries for a series of years; also the regular annual statement of receipts and expenditures for the year ending January 31st, 1920:—

ATTENDANCE.

	1912	1913	1914	1915	1916	1917	1918	1919
Friday	....	....	....	1,195	4,287	1,794	790	2,932
Saturday	....	....	2,550	3,214				
Monday	3,206	....	5,827	7,063	7,985	5,330	3,410	5,488
Tuesday	6,391	8,210	11,723	11,629	8,228	8,994	3,115	8,254
Wednesday	12,235	15,327	12,128	12,612	12,470	13,812	3,985	10,789
Thursday	9,587	13,180	5,050	6,915	8,711	8,022	1,329	5,686
Friday	3,590	4,266	....	....	....	....	....	....
Total	35,009	40,983	37,278	42,628	41,681	37,952	12,629	33,149
Gate Receipts	$3,690	$4,622	$4,219	$4,363	$4,504	$4,959	$2,770	$4,380

COMPARATIVE STATEMENT OF ENTRIES, 1910–1919.

—	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919
HORSES:										
Clydesdale	141	164	128	202	144	171	140	158	211	198
Shire	17	12	11	10	6	7	8	5	9	3
Percheron	.....	.....	48	48	35	28	27	32	42	39
Belgian	.....	.....	.....	.....	.....	.....	.....	.....	.....	5
Hackney	18	21	13	27	27	44	22	35	36	21
Standard-Bred	17	16	12	11	14	33	28	36	24	18
Thoroughbred	14	8	6	17	16	12	31	22	18	12
Pony	6	15	13	13	14	30	12	20	15	9
Heavy Draft	35	38	35	45	31	51	34	24	43	37
Saddle Horses	.....	.....	.....	.....	.....	.....	.....	6	.....	.....
	248	274	266	373	287	376	302	338	398	342
BEEF CATTLE:										
Shorthorn	36	39	34	47	44	62	82	74	107	107
Hereford	21	16	12	13	13	27	19	43	70	40
Aberdeen-Angus	8	6	7	11	6	19	27	27	38	55
Galloway	13	4	6	4	8	10	.....	.....	.....	.....
Grade or Cross	51	48	44	58	83	83	67	31	40	56
Amateur Class	62	36	31	21	40	57	.....	.....	.....	.....
Export Steers	10	5	6	6	9	.....	.....	.....	.....	.....
Dressed Carcasses	17	.....	.....	.....	.....	.....	.....	.....	.....	.....
Inter-County Baby Beef	.....	.....	.....	.....	.....	.....	.....	3	5	12
	218	154	140	160	203	258	185	178	260	270
DAIRY CATTLE:										
Shorthorn	1	1	2	6	4	6	4	5	7	7
Ayrshire	10	22	19	16	17	53	41	36	43	49
Holstein	26	34	37	34	27	72	34	39	51	65
Jersey	6	.....	3	14	13	4	24	19	25	9
Grade	5	5	8	9	11	11	11	6	8	4
	48	62	69	79	72	146	114	105	134	134

COMPARATIVE STATEMENT OF ENTRIES, 1910-1919.—*Continued.*

	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919
SHEEP:										
Cotswold	52	54	43	37	52	62	65	56	68	56
Lincoln	38	45	45	21	44	36	25	45	18	31
Leicesters	44	30	25	37	38	33	31	35	67	48
Oxford-Down	32	55	35	35	52	56	25	59	97	66
Shropshire	31	36	41	40	55	61	51	81	66	65
Southdown	26	54	38	52	63	50	51	56	81	73
Dorset Horn	19	17	15	16	18	26	42	21	45	43
Hampshire and Suffolk	8	14	11	18	19	35	28	34	64	56
Grade or Cross	72	66	69	65	90	63	71	70	82	98
	322	371	322	321	431	422	389	457	588	536
SHEEP CARCASSES:										
Cotswold	13	16	10	9	14	14	7	7	8	4
Lincoln	9	9	11	5	11	6	4	3	4	1
Leicesters	14	5	7	7	6	7	3	4	4	6
Oxford-Down	10	14	3	9	12	11	4	6	10	3
Shropshire	11	6	8	8	14	13	7	8	7	5
Southdown	9	14	10	11	16	9	3	3	9	5
Dorset Horn	11	8	7	6	9	6	5	6	7	6
Hampshire and Suffolk	1	3	4	2	4	5	4	6	7	7
Grade or Cross	33	31	30	25	43	11	42	38	40	56
	111	106	90	82	129	92	79	81	96	93
SWINE:										
Yorkshire	66	61	40	62	62	72	60	57	66	74
Berkshire	71	70	42	67	36	60	48	80	85	90
Tamworth	31	30	17	22	22	36	24	41	32	28
Chester White	19	22	18	26	23	40	30	37	30	33
Any Other Breed	58	30	26	18	8	34	45	15	44	24
Grade or Cross				39	31	48	......	......	......	.....
Bacon, Hogs, Pure Breed	31	24	16	16	19	40	24	23	33	43
Bacon Hogs, Grade	20	18	9	14	17	......	......	......	......	.....
Carcasses, Pure Breed	23	21	11	12	19	34	24	17	33	38
Carcasses, Grade	17	17	8	14	13	......	......	......	......	.....
Butcher Hogs	.....	.....	......	......	......	23	15	11	12	10
Carcasses, Butcher Hogs	.....	.....	......	......	......	22	14	11	12	10
Farmers' Sons, Special	.....	.....	......	......	......	6	2	7	4	6
	336	293	187	290	250	415	286	299	351	356
SEED	148	138	186	269	337	331	374	252	394	350
POULTRY:										
Fowls	3,542	3,577	3,296	3,416	3,311	4,198	4,092	4,518	4,651	4,976
Turkeys & Water Fowl	449	379	298	385	378	346	396	462	455	449
Pigeons	443	455	435	255	474	558	663	872	913	923
Pet Stock	48	18	38	17	28	46	18	25	89	49
Utility Pen	13	18	18	11	13	20	31	59	69	78
Selling Class	331	323	251	274	147	229	82	......	......	.....
Dressed Poultry	178	273	159	250	228	185	208	166	136	179
Laying Pens	.....	.....	......	......	......	......	......	11	10	12
	5,004	5,043	4,495	4,608	4,579	5,582	5,490	6,113	6,323	6,666
JUDGING COMPETITION:										
Regular	250	293	242	309	250	195	124	145	140	60
Inter-County Teams	.....	.....	......	......	......	54	63	60	63	30
	250	293	242	309	250	249	187	205	203	90

72 HOUR DAIRY TEST, ONTARIO PROVINCIAL WINTER FAIR, GUELPH, 1919.

Cat. No.	Prize.	Name and age of Animal.	Lbs. Milk.	Fat. %	Fat. Lbs.	Fat. Points.	Solids, not Fat. L. R.	Solids, not Fat. %	Lbs. S.N.F.	Points for S.N.F.	No. Days Milking.	Points	Total Points.
		Shorthorn, 48 Mos. and Over.											
614	1st	Lily of the Valley	142.6	3.4	4.84	121.0	32.7	9.02	12.86	38.58	54	2.4	161.98
612	2nd	Butterfly Bellona	129.5	4.0	5.18	129.5	34.2	9.55	12.36	37.08	41	1.1	167.68
611	3rd	Stanley's Pride	127.8	3.3	4.21	105.25	32.5	8.95	11.43	34.29	43	1.3	140.84
		Shorthorn, Under 36 Mos.											
616	1st	Oxford Lady	92.4	3.8	3.51	87.75	33.4	9.3	8.59	25.77	15	......	113.52
		Ayrshire, 48 Mos. and Over.											
619	1st	Pearl of Balquido	185.2	4.4	8.14	203.5	32.8	9.3	17.22	51.66	27	......	255.16
628	2nd	Grace of Fernbrook	194.5	3.6	7.0	175.	32.7	9.07	17.64	52.92	16	......	227.92
620	3rd	Acmelea Grace	166.1	4.2	6.97	174.25	34.0	9.55	15.86	47.58	28	......	221.83
625	4th	Brookside Lady	140.8	4.8	6.75	168.75	32.6	9.35	13.16	39.48	25	......	208.23
618	5th	Dairymaid of Orkney	181.1	3.4	6.15	153.75	32.8	9.05	16.38	49.14	34	.4	203.29
621	6th	Humesbaugh Perfect Lady	132.6	4.5	5.96	149.	31.7	9.05	12.00	36.	22	......	185.
623	7th	Mountain Lass	144.7	3.8	5.49	137.25	31.8	8.9	12.87	38.61	19	......	175.86
		Ayrshire, 36 Mos. and Under 48.											
633	1st	Freetrader's Sarah 2nd	163.8	3.9	6.38	159.5	32.7	9.15	14.98	44.94	27	......	204.44
635	2nd	Violet 2nd of Hickory Hill	149.5	4.1	6.12	153.	32.5	9.15	13.67	41.01	37	.7	194.71
630	3rd	Minerva of Craigielea	145.6	4.1	5.96	149.0	34.	9.52	13.86	44.58	18	......	190.58
629	4th	Queen of Avonsyde	140.2	4.1	5.74	143.50	34.5	9.65	13.50	40.56	33	.3	184.36
631	5th	Lady's Pet of Craigielea	146.6	3.7	5.42	135.5	34.	9.45	13.85	41.55	33	.3	177.35
		Ayrshire, Under 36 Mos.											
640	1st	Pansy of Craigielea	129.7	4.0	5.18	129.5	33.4	9.35	12.12	36.36	27	......	165.86
644	2nd	Springbank Betsy Brown	144.1	3.3	4.75	118.75	32.3	8.9	12.82	38.46	64	3.4	160.61
645	3rd	Springbank Lady Jane 2nd	144.5	3.3	4.76	119.	33.2	9.12	13.17	39.51	41	1.1	159.61
646	4th	Freetrader's Sarah 4th	143.2	3.4	4.86	121.50	31.2	8.65	12.38	37.14	26	......	158.64
647	5th	Freetrader's Jean Armour	127.0	3.8	4.82	120.5	33.2	9.25	11.74	35.22	22	......	155.72
639	6th	Sunnybrook Sunbeam	114.7	4.2	4.81	120.25	34.	9.55	10.95	32.85	45	1.5	154.60
643	7th	Dainty Lass of Springbank	115.0	4.0	4.6	115.0	31.7	8.92	10.25	30.75	74	4.4	150.15
		Holstein, 48 Mos. and Over.											
676	1st	Roxie Colantha Queen	253.5	3.4	8.61	215.25	30.8	8.55	21.67	65.01	18	......	280.26
688	2nd	Butter Girl Schuling	236.2	3.5	8.26	206.50	32.7	9.05	21.37	64.11	13	......	270.61

683	3rd	Cornish Lodge Margaret Mercedes..	224.2	3.5	7.84	196.0	33.2	9.17	20.56	61.68	30	......	257.68
681	4th	Daisy DeKol Merthilde	221.1	3.4	7.51	187.75	33.2	9.15	20.23	60.66	21	......	248.41
675	5th	Lynderwood Colantha	217.3	3.4	7.38	184.5	31.5	8.72	18.94	56.82	56	2.6	243.92
688a	6th	Oakhurst Buttergirl 3rd	238.0	3.0	7.14	178.5	33.	8.5	20.23	60.69	18	......	239.19
680	7th	Lady Keyes Mercena	158.2	4.8	7.59	189.75	30.2	8.75	13.84	41.52	15	......	231.27
669	8th	Lady Korndyke Abberkerk	226.0	3.	6.78	169.5	32.2	8.8	19.88	59.64	43	1.3	230.44
		Holstein, 36 Mos. and Under 48.											
698	1st	Lady Comet Ormsby	192.7	4.7	9.05	226.25	31.7	9.1	17.53	52.59	30	......	278.84
689	2nd	Cornelia Abbekirk DeKol	231.9	3.2	7.42	185.5	31.5	8.67	20.1	60.3	13	......	245.8
695	3rd	Centre View Mary Abbekirk	184.8	4.0	7.39	184.75	33.4	9.35	17.27	51.81	20	......	236.56
693	4th	Princess Houwtje DeKol	207.0	3.2	6.62	165.50	32.2	8.75	18.11	54.33	19	......	219.83
694	5th	Belle Pieterje Lyons	178.6	3.5	6.25	156.25	33.2	9.17	16.37	49.11	32	.2	205.56
692	6th	Hilda Duchess	184.0	3.3	6.07	151.75	32.7	9.	16.56	49.68	25	......	201.43
699	7th	Pontiac Ino Posch	163.8	3.2	5.24	131.0	32.7	8.97	14.69	44.07	20	......	175.07
690	8th	Anna Posch Houwtje	146.5	3.1	4.54	113.50	33.0	9.02	13.21	39.63	46	1.6	154.73
		Holstein, Under 36 Mos.											
705	1st	Belle Abbekerk 2nd	204.4	3.4	6.94	173.5	33.5	9.22	18.84	56.52	21	......	230.02
707	2nd	B.B. Cornucopia	170.7	3.9	6.65	166.25	32.7	9.15	15.62	46.86	20	......	213.11
700	3rd	Bessie Caroline Fayne	174.6	3.	5.23	130.75	31.2	8.55	14.92	44.76	31	.1	175.61
703	4th	Lady Beets Korndyke	147.6	3.4	5.01	125.25	31.7	8.77	12.94	38.82	38	.8	164.87
711	5th	Patricia Colantha Abbekerk	150.1	3.3	4.95	123.75	31.5	8.7	13.05	39.15	28	......	162.90
712	6th	Madame Vale Abbekerk	138.1	3.6	4.97	124.25	32.	8.9	12.29	36.87	34	.4	161.52
709	7th	Johanna Hengerveld Baroness ...	144.9	3.2	4.63	115.75	33.2	9.1	13.18	39.54	38	.8	156.09
706	8th	Bessie Walker Abbekerk	132.2	3.6	4.75	118.75	33.0	9.15	12.09	36.27	17	......	155.02
		Jersey, 48 Mos. and Over.											
731	1st	Fanny of Edgely	173.2	4.9	8.48	212.	31.4	9.07	15.70	47.10	27	......	259.10
732	2nd	Edgely Queen 2nd	125.6	4.5	5.65	141.25	34.7	9.8	12.30	36.9	20	......	178.15
		Jersey, 36 Mos. and Under 48.											
735	2nd	Beauty Maid of Edgely	121.6	4.4	5.35	133.75	32.3	9.17	11.15	33.45	24	......	167.2
733	3rd	Black Beauty	81.0	5.6	4.53	113.25	34.4	10.00	8.1	21.3	119	8.9	146.45
		Grade, 48 Mos. and Over.											
740	1st	Bloom	197.1	3.0	5.91	147.75	30.4	8.35	16.45	49.35	62	3.2	200.30
		Grade, Under 36 Mos.											
742	1st	Nigger	159.4	3.2	5.10	127.5	32.2	8.85	14.10	42.30	80	5.0	174.8
743	2nd	Lona	141.9	2.8	3.97	99.25	33.	8.95	12.70	38.1	17	......	137.35

FINANCIAL STATEMENT

Of the Ontario Provincial Winter Fair, for the year ending January 31st, 1920.

RECEIPTS.

Legislative grant		$17,000 00
Special Legislative grant		5,000 00
Federal grant		5,000 00
Canadian Clydesdale Breeders' Association		1,500 00
Canadian Shire Association		50 00
Canadian Jersey Association		50 00
Canadian Ayrshire Breeders' Association		300 00
Dominion Shorthorn Breeders' Association		550 00
Canadian Hereford Breeders' Association		250 00
Aberdeen-Angus Association		260 00
Holstein-Friesian Association		725 00
Ontario Sheep Breeders' Association		800 00
Ontario Large Yorkshire Society		125 00
Ontario Berkshire Society		75 00
Ontario Swine Breeders' Association		75 00
Concessions at Fair		347 02
Militia and Defence		123 58
Gate Receipts		4,380 20
Entry Fees		6,995 61
Horses	$666 40	
Horse stalls	275 00	
Cattle	897 92	
Sheep	473 25	
Swine	347 65	
Wool	36 75	
Judging	142 50	
Seeds	263 77	
Poultry	3,292 37	
Poultry memberships	600 00	
Advertising in premium list and catalogue (including $265.00 from 1918)		1,999 05
Dominion Government Specials		1,484 00
Proceeds of catalogues		190 45
Proceeds of sheep carcasses		1,002 38
Proceeds of hog carcasses (including $73.79 from 1918)		3,078 92
Proceeds of milk		884 35
Proceeds of seeds (including $23.05 from 1918)		1,185 10
Proceeds of dressed poultry		1,315 86
Refund prize money, 1918		10 00
Bell Telephone Refund, 1918		1 00
Ontario Poultry Association, Grant, 1918		50 00
Express on seeds		2 75
Advertising, *O.P.W.F. Review*		600 00
Refund labor		27 50
Sale of old iron and pulper		10 00
Ensilage		125 20
Dairy feed		31 05
Debit balance		4,204 72
Total		$59,808 74

EXPENDITURES.

Balance due Treasurer as per last report		$6,095 32
Directors' expenses		1,120 01
Directors' luncheons		651 02
Shorthorn special, 1917		25 00
Block test, 1918		35 00
Prize money, 1918		17 00
Sale of seeds, 1918		49 25
Membership fees, Ontario Seed Growers' Association, 1918		102 00
Prize Money		25,342 25
Horses	$4,670 00	
Beef cattle	3,515 00	

Dairy cattle	$2,250 00	
Sheep	3,190 00	
Swine	2,145 00	
Pigeons	473 00	
Poultry	4,827 25	
Dressed poultry	527 00	
Seeds	1,351 00	
Judging	465 00	
Dominion Government specials	1,484 00	
Shorthorn special	50 00	
Bright special	25 00	
Holstein-Friesian special	250 00	
Keith special	10 00	
Aberdeen-Angus special	110 00	
Poultry judges		$814 30
Live stock judges		996 45
Seed judges		60 00
Clerks		435 60
Sale of milk, 1918		42 74
Printing		2,036 62
Advertising		1,251 20
Printing *O.P.W.F. Review*		1,170 98
Office help		1,100 75
General help		789 35
Seed room help		164 20
Managing arena		268 00
Turnstile		159 00
Live stock help		1,047 58
Poultry help		1,475 00
Auditor		15 00
Taxes		15 46
Fitting building		1,336 23
Office supplies		217 13
Ribbons and badges		893 30
Poultry coops		20 00
Special "Faulds Cup"		11 00
Bags, seed department		90 40
Decorating arena		158 17
Feed: Straw, $387.41; hay, $61.76; grain, $325.83; ensilage, $130.70		905 70
Shavings and tanbark		233 90
Heat and light		1,171 46
Insurance		91 50
Interest charged		207 75
Express		122 95
Telephone		75 12
Telegrams		13 53
Exchange		18 52
Postage		100 00
Band		128 00
Block test		244 95
Dairy test		136 60
Bright memorial		25 00
Ryries, engraving		47 20
Sale of sheep carcasses		1,002 18
Sale of hog carcasses		3,005 12
Sale of dressed poultry		1,318 07
Sale of seeds		1,141 89
Sale of milk		938 06
Membership fees, Ontario Poultry Association		600 00
Stabling		85 50
Rebate freight		63 93
Refund entry fees		83 50
Refund stall fees		18 00
Membership fees, Eastern Canada Live Stock Union		25 00
Total		$59,808 74

J. I. Flatt,
President.

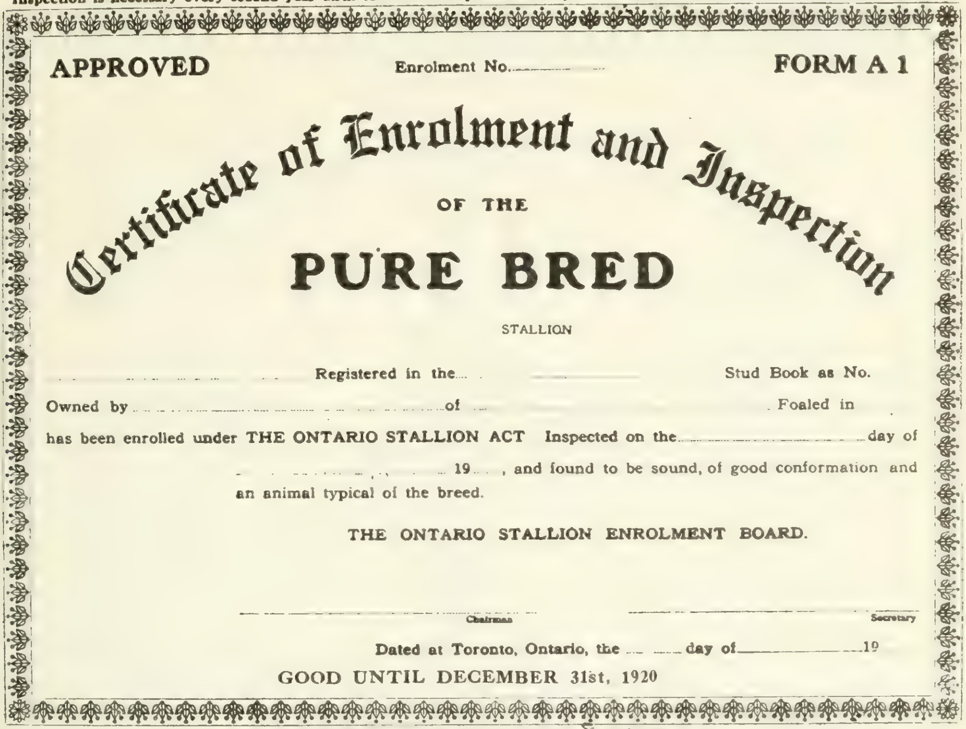
R. W. Wade,
Secretary.

Stallion Enrolment

SUMMARY FOR THE PROVINCE OF ONTARIO SHOWING BY COUNTIES THE NUMBER OF THE DIFFERENT BREEDS OF STALLIONS ENROLLED DURING 1919.

County.	Clydesdales.	Percherons.	Shire.	Belgian Draft.	French Can.	Suffolk.	Standard Bred.	Thoroughbred.	Hackney.	French Coach.	German Coach.	Ponies, Morgans and Hunter.	Total Horses Enrolled.
Brant	3	6	....	1	....	1	1	....	2	....	....	....	14
Bruce	50	10	1	3	1	....	10	1	....	....	....	....	76
Carleton	31	3	....	2	1	....	12	....	2	....	....	....	51
Dufferin	41	2	....	....	....	....	4	....	1	....	....	....	48
Dundas	7	3	....	....	....	....	2	....	1	....	....	....	13
Durham	25	1	1	....	....	1	4	....	3	....	1	1	37
Elgin	15	10	4	1	....	1	3	....	1	....	1	....	36
Essex	13	10	1	2	....	....	3	....	....	....	....	....	29
Frontenac	3	5	....	....	....	....	8	....	....	....	....	....	16
Glengarry	14	7	....	....	....	....	2	1	3	....	....	....	27
Grenville	7	1	1	....	....	....	5	....	....	....	....	....	14
Grey	51	5	....	1	....	....	9	....	1	....	....	....	67
Haldimand	16	7	1	....	....	....	6	....	2	....	....	....	32
Halton	4	6	1	....	1	....	1	2	....	....	....	....	15
Hastings	13	2	....	1	....	....	15	....	1	....	....	....	32
Huron	49	11	1	....	....	....	21	....	1	....	....	....	83
Kent	22	21	3	....	....	....	14	....	....	....	....	1	61
Lambton	38	14	4	....	....	....	15	....	....	....	....	....	71
Lanark	26	4	2	1	....	....	6	....	3	....	....	....	42
Leeds	7	5	1	....	....	....	8	....	....	....	....	....	21
Lennox & Addington	6	7	....	....	....	....	....	....	....	....	....	....	13
Lincoln	4	2	....	....	....	....	4	....	....	....	....	....	10
Middlesex	32	17	....	4	....	....	12	....	1	....	1	1	68
Norfolk	7	11	....	....	....	....	1	....	2	....	1	....	22
Northumberland	16	7	....	....	....	....	6	2	....	....	....	....	31
Ontario	60	7	2	....	....	....	6	....	2	....	....	....	77
Oxford	19	10	....	....	....	....	5	....	1	....	....	....	35
Peel	25	5	1	....	....	....	8	2	1	....	....	....	42
Perth	47	7	....	....	....	....	18	1	1	....	....	....	74
Peterboro	20	9	....	....	....	....	3	....	2	....	....	....	34
Prescott	5	3	....	....	....	....	....	....	....	....	....	....	8
Prince Edward	4	8	....	....	....	....	3	....	....	....	....	....	15
Renfrew	25	11	1	1	1	....	5	....	1	....	....	....	45
Russell	9	6	....	1	....	....	2	....	....	....	....	....	18
Simcoe	46	16	2	....	....	....	8	....	2	....	....	....	74
Stormont	6	2	....	....	....	....	3	....	....	....	....	....	11
Victoria	31	3	....	....	....	....	2	....	1	....	....	....	37
Waterloo	23	6	....	....	....	....	10	1	3	....	1	....	44
Welland	1	4	1	1	....	....	5	....	....	....	....	....	12
Wellington	41	7	....	....	....	....	5	2	2	....	....	1	58
Wentworth	7	4	....	1	....	....	5	1	....	....	....	....	18
York	66	17	3	1	....	....	12	5	5	1	....	....	110
New Ontario	33	21	1	....	2	....	12	....	2	1	1	....	73
Outside points	8	3	....	....	....	....	2	1	....	....	....	1	15
	976	326	32	21	6	3	286	19	47	2	6	5	1,729

Inspection is necessary every second year until the horse has passed seven years, but this Certificate must be renewed each year.



APPROVED Enrolment No.......... **FORM A 1**

Certificate of Enrolment and Inspection

OF THE

PURE BRED

STALLION

.... Registered in the .... Stud Book as No.

Owned by .... of .... Foaled in

has been enrolled under THE ONTARIO STALLION ACT Inspected on the .... day of

.... 19...., and found to be sound, of good conformation and an animal typical of the breed.

THE ONTARIO STALLION ENROLMENT BOARD.

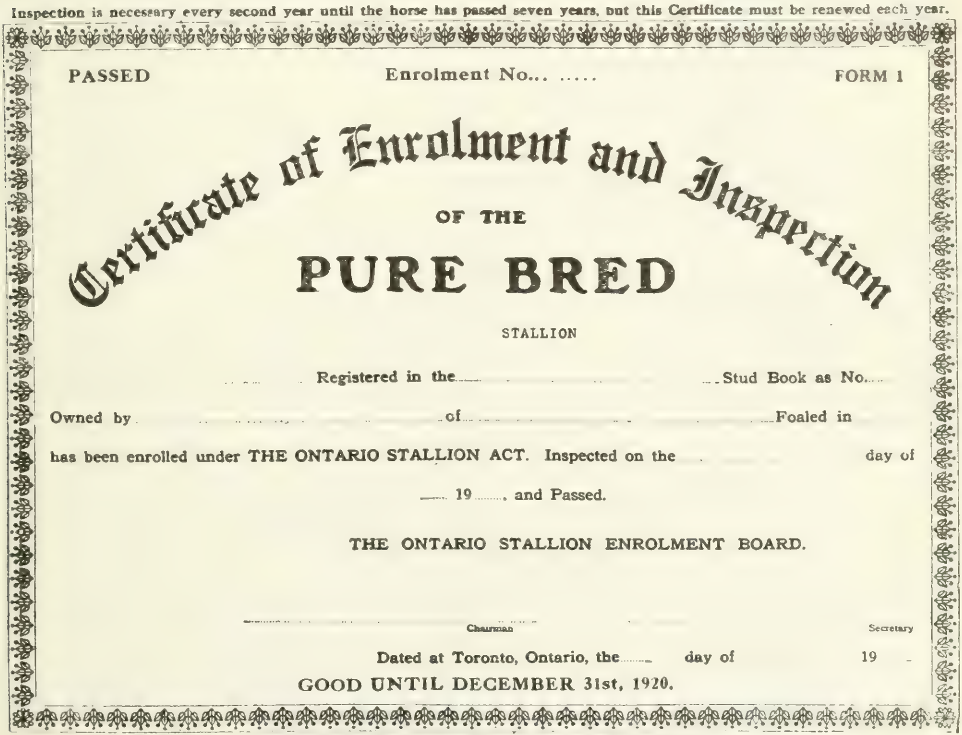
.... Chairman .... Secretary

Dated at Toronto, Ontario, the .... day of 19

GOOD UNTIL DECEMBER 31st, 1920

Application for Renewal and Transfer on back of Certificate.

Inspection is necessary every second year until the horse has passed seven years, but this Certificate must be renewed each year.



PASSED Enrolment No... ..... **FORM 1**

Certificate of Enrolment and Inspection

OF THE

PURE BRED

STALLION

.... Registered in the .... Stud Book as No....

Owned by .... of .... Foaled in

has been enrolled under THE ONTARIO STALLION ACT. Inspected on the .... day of

.... 19........, and Passed.

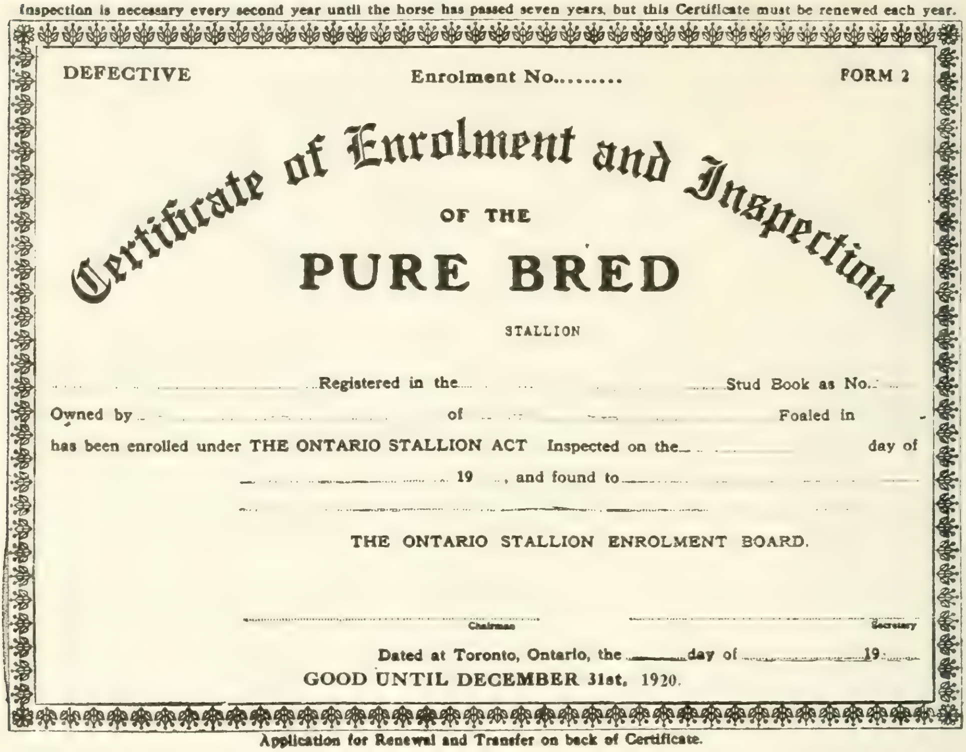
THE ONTARIO STALLION ENROLMENT BOARD.

.... Chairman .... Secretary

Dated at Toronto, Ontario, the .... day of 19

GOOD UNTIL DECEMBER 31st, 1920.

Application for Renewal and Transfer on back of Certificate.



Inspection is necessary every second year until the horse has passed seven years, but this Certificate must be renewed each year.

DEFECTIVE **Enrolment No.........** **FORM 2**

Certificate of Enrolment and Inspection

OF THE

PURE BRED

STALLION

..................Registered in the..................Stud Book as No...

Owned by..................of..................Foaled in

has been enrolled under THE ONTARIO STALLION ACT Inspected on the..................day of

..................19..., and found to..................

....

THE ONTARIO STALLION ENROLMENT BOARD.

.... Chairman

.... Secretary

Dated at Toronto, Ontario, the......day of..................19......

GOOD UNTIL DECEMBER 31st, 1920.

Application for Renewal and Transfer on back of Certificate.

Enrolment No.................................

Premium No...............................

This is to Certify that the..................................

Stallion..

Registered in the ....

Stud Book as No.........................Foaled in.........................

Owned by..

of ....

Recommended by the Premium Inspection Board as a
Premium Horse for the year 1920

....
Chairman

....
Secretary

BELOW IS GIVEN LIST OF STALLIONS WHICH HAVE RECEIVED PREMIUM CERTIFICATES FOR THE YEAR 1919.

Name of Horse.	Record No.	Breed.
Miroton (imp.)	4444	Percheron.
Prince Palatine (imp.)	15907	Clydesdale.
Baron's Luck (imp.)	5546	Clydesdale.
Bonnie Solway (imp.)	15293	Clydesdale.
Juvenil (imp.)	3055	Percheron.
Knight of Maryfield (imp.)	7760	Clydesdale.
Tressilian (imp.)	16332	Clydesdale.
Great Eastern	15162	Clydesdale.
Royal Design	17286	Clydesdale.
Village Swain (imp.)	15167	Clydesdale.
Everard (imp.)	16333	Clydesdale.
Aurelian (imp.)	18325	Clydesdale.
Blaiket Blend	15197	Clydesdale.
Horizon (imp)	16341	Clydesdale.
Ravenscraig (imp.)	16860	Clydesdale.
Baron Minto	13980	Clydesdale.
Dunnottar	13906	Clydesdale.
Bricanam	6565	Percheron.
Locksley	15239	Clydesdale.
Pacific (imp.)	13173	Clydesdale.
Bonaday	1478	Standard Bred.
King Junior	1068	Shire.
Hurleur (imp.)	1599	Percheron.
Gold Heels	1607	Standard Bred.
Dunure Lucky Star	15379	Clydesdale.
Norfolk Performer	131	Hackney.
Ike Medium	1070	Standard Bred.
Elmer Dickson	2295	Standard Bred.
Dandy	5542	Percheron.
Lord Gray	12390	Clydesdale.
Isly (imp.)	3066	Percheron.
Solidity	18367	Clydesdale.
Joe Gleam	16716	Clydesdale.
Dunure Captain	14126	Clydesdale.
Tom McNab	9800	Clydesdale.
Loyal Hero (imp.)	9715	Clydesdale.
Belle Boy (imp.)	8524	Clydesdale.
Scottish Moncrieffe	14169	Clydesdale.
McGregor Buchlyvie	20605	Clydesdale.
Sir Simon Romeo	16919	Clydesdale.
Lord Lochinvar	18741	Clydesdale.
Adbolton Premier	840	Hackney.
Ryecroft Model	12379	Clydesdale.
Cumberland's Glory	15788	Clydesdale.
Black Gregor (imp.)	19658	Clydesdale.
Dalziel (imp.)	10626	Clydesdale.
Green's Favorite	19656	Clydesdale.
Sir James of Alton	17283	Clydesdale.
Pearl Prince	19657	Clydesdale.
Baron's Court	18366	Clydesdale.
Baron Alton	15295	Clydesdale.
Golden Taylor	18590	Clydesdale.
Jabot	3139	Percheron.
Commodore	9596	Clydesdale
Boulder Grange Du Fosteau	886	Belgian Draft.
Nigby Boy	8285	Percheron.
Monogram	8304	Percheron.
Baron Temple	16342	Clydesdale.
Dunure David	13674	Clydesdale.
Northern Light	13909	Clydesdale.
Jeannin (imp.)	3074	Percheron.
Nard (imp.)	6382	Percheron.

BELOW IS GIVEN LIST OF STALLIONS WHICH HAVE RECEIVED PREMIUM CERTIFICATES FOR THE YEAR 1919.—*Continued.*

Name of Horse.	Record No.	Breed.
King Thomas	9254	Clydesdale.
Kodi (imp.)	4462	Percheron.
King of the Saxons (imp.)	13760	Clydesdale.
Coveney Marmion	329	Hackney.
Craigie Baronet	17599	Clydesdale.
British Hero	20573	Clydesdale.
Riverbank	17954	Clydesdale.
Harvest Reaper	2533	Standard Bred.
Croton Forest King	1222	Shire.
Dunure Gulf Stream	16859	Clydesdale.
Lambton (imp.)	15299	Clydesdale.
Crown King	18915	Clydesdale.
King's Heather	14049	Clydesdale.
Peter Range	2226	Standard Bred.
Kent Favourite	16472	Clydesdale.
Lassis (imp.)	3920	Percheron.
Athol King	9178	Clydesdale.
Knockinlaw Revolt	15482	Clydesdale.
Gay Ronald	15342	Clydesdale.
Lenoir	4443	Percheron.
Touchstone	13846	Clydesdale.
Mouchoir	4725	Percheron.
Billy Bingen	2182	Standard Bred.
Pride of Glencairn	10377	Clydesdale.
King's Champion	13174	Clydesdale.
Baron Senwick	16408	Clydesdale.
Spartan	509	Hackney.
Voltaire	8302	Percheron.
Bright Guard (imp.)	13410	Clydesdale.
Gartly Forever (imp.)	8412	Clydesdale.
The Count of Hillcrest	15774	Clydesdale.
Merry Baron (imp.)	17284	Clydesdale.
Gros-bec (imp.)	1554	Percheron.
Prince of Greenhall (imp.)	11684	Clydesdale.
Won't Dance	1669	Standard Bred.
Prince Blue	1315	Standard Bred.
Taft	9071	Percheron.
Honest John	12083	Clydesdale.

Co-Operative Car Shipments

CO-OPERATIVE SHIPMENTS OF LIVE STOCK.

Below is given the shipments for the years 1908 to 1919 inclusive, and that for 1919 in detail:—

NUMBER IN EACH SHIPMENT.

Year.	Horses.	Cattle.	Sheep.	Swine.	Total.
1908	22	74	14	15	125
1909	25	70	84	4	183
1910	39	51	36	7	133
1911	58	51	51	18	178
1912	51	45	24	20	140
1913	47	71	107	21	246
1914	49	97	34	20	200
1915	28	104	76	8	216
1916	59	185	100	22	366
1917	70	269	196	15	550
1918	67	250	180	4	501
1919	24	154	154	4	336

DETAIL OF CO-OPERATIVE SHIPMENTS FOR 1919.

Stock.	Jan.	Feb.	March.	April.	May.	June.	Oct.	Total.	
Horses—									
Clydesdales	......	1	8	6	4	......	1	20	
Percherons	......	......	......	1	......	......	......	1	
Thoroughbreds	......	......	......	1	......	......	......	1	
French Canadian	......	......	......	......	......	......	2	2	
Cattle—									24
Shorthorns	13	24	25	13	5	11	1	92	
Jerseys	......	......	......	......	......	1	6	7	
Aberdeen-Angus	2	6	4	......	8	......	2	22	
Holsteins	1	3	2	......	4	5	3	18	
Hereford	......	......	......	3	3	......	......	6	
Ayrshire	7	......	......	1	......	......	1	9	
Sheep—									154
Hampshires	......	......	......	......	......	......	1	1	
Cotswolds	......	......	......	......	......	5	......	5	
Shropshires	......	10	......	......	......	......	49	59	
Suffolks	......	6	......	......	......	......	5	11	
Leicesters	......	......	......	1	......	......	7	8	
Dorsets	......	......	......	......	......	7	6	13	
Southdown	......	2	......	......	......	......	......	2	
Oxfords	2	9	12	......	......	......	32	55	
Swine—									154
Yorkshire	......	......	1	......	......	1	......	2	
Hampshires	2	......	......	......	......	......	......	2	
									4
	27	61	52	26	24	30	116		336
No. of cars	2	2	2	2	2	2	2		

Incorporated Poultry Associations

Aylmer Poultry and Pet Stock Association.
Beamsville and Lincoln Poultry Association.
Belleville Poultry Association.
Brampton and Peel County Poultry and Pet Stock Association.
Brantford and Brant County Poultry and Pet Stock Association.
Brockville Poultry and Pet Stock Association.
Border Cities' Poultry Association, Windsor.
Caledonia Poultry Association.
Carleton Place Poultry Association.
Chatham Poultry & Pet Stock Association.
Collingwood Poultry Association.
Dufferin County Poultry and Pet Stock Association.
Dundas & North Wentworth Poultry & Pet Stock Association.
Dunnville and Haldimand County Poultry Association.
East York Poultry Association.
Elgin Poultry and Pet Stock Association.
Fort Frances Poultry Association.
Galt Poultry & Pet Stock Association.
Guelph Poultry Association.
Hamilton and Wentworth Poultry Association.
Hanover Poultry Association.
Huron County Poultry and Pet Stock Association.
Ingersoll & South Oxford Poultry Association.
Kingston Poultry Association.
Kitchener Poultry Association.
Lambton County Poultry and Pet Stock Association.
Lindsay Poultry and Pet Stock Association.
Listowel Poultry Association.
London Poultry and Pet Stock Association.
Mitchell and Perth County Poultry and Pet Stock Association.
Napanee Poultry, Pigeon and Pet Stock Association.
New Ontario Poultry and Pet Stock Association.
Nickel Belt Poultry Association, Sudbury.
Norfolk Poultry Association.
North Bay Poultry Association.
Northern Ontario Poultry Association.
North York Poultry and Pet Stock Association.
Northumberland and Durham Poultry Association.
North Wellington Poultry and Pet Stock Association.
Oakville Poultry and Pet Stock Association.
Oakwood Poultry Association, Toronto.
Ottawa Poultry Association.
Owen Sound and County of Grey Poultry Association.
Paris Poultry Association.
Peterboro Poultry Association.
Powassan Poultry Association.
Power City Poultry & Pet Stock Association.
Prince Edward County Poultry, Pigeon and Pet Stock Association.
Renfrew Poultry Association.
Sarnia Poultry Association.
Smith's Falls Poultry and Pet Stock Association.
St. Catharines and Niagara District Poultry Association.
Stratford Poultry and Pet Stock Association.
Tavistock Poultry and Pet Stock Association.
Tillsonburg Poultry & Pet Stock Association.
Timiskaming District Poultry Association.
Toronto Poultry and Pet Stock Association.
Waterloo Poultry and Pet Stock Association.
West Elgin County Poultry and Pet Stock Association.
Waterdown and East Flamboro Poultry Association.
Wiarton Poultry Association.
Woodstock Poultry Association.

COPY OF AN ORDER IN COUNCIL GOVERNING GRANTS TO LOCAL POULTRY ASSOCIATIONS.

1. Local Poultry Associations may be organized in the Districts and in such manner as prescribed herewith, and may, upon application to the Minister of Agriculture through the Director of the Live Stock Branch, become recognized Poultry Associations, and shall, under the conditions named, receive such assistance and such grants out of the funds appropriated by the Legislature for this purpose, as provided herewith.

2.—(*a*) Any Local Poultry Associations heretofore recognized shall be continued so long as they comply with the regulations providing for the annual conduct of recognized Local Poultry Associations.

(*b*) In order to qualify for recognition and grant, Local Poultry Associations shall henceforth be recognized upon the application of 60 bona fide poultry keepers, not members of any other Poultry Association, who have become members by the payment of fees.

(1) Where the recognition of an Association is cancelled for non-compliance with the regulations, another Association may be recognized upon conforming to the conditions herein set forth.

(2) Provided always that not more than one Association shall be recognized in any city, or more than two in any electoral district, unless such district includes a city, when an additional Association may be recognized in the city.

(*c*) When any recognized Association fails to comply with the regulations during any calendar year, the Minister of Agriculture may give permission for a new Association to be formed in that district.

3. Application for recognition must be made on a form to be supplied by the Minister of Agriculture through the Director of the Live Stock Branch, and such application shall include a copy of the constitution of the Association, the minutes of the organization meeting, and a list of the officers and directors.

4. Local Poultry Associations shall receive annually, on recommendation of the Minister of Agriculture, a grant of $50.00 and in addition a lecturer shall be supplied to discuss questions relating to the poultry industry at a meeting to be held under the auspices of the Local Poultry Association.

5. The grant shall only be paid upon receipt of an annual report made out in such a manner as may be required by the Minister of Agriculture.

6. The Minister of Agriculture may make such regulations as may be required for the better carrying out of this Order in Council.

Canadian Swine Breeders' Association

ANNUAL MEETING

The Annual Meeting of the Canadian Swine Breeders' Association was held in the Carls-Rite Hotel, Toronto, at 8 p.m. on Monday, February 2nd, 1920.

In the absence of the President, Mr. J. E. Brethour occupied the chair.

The minutes of the last Annual Meeting were read and adopted and the financial statement, as presented by the Secretary, was accepted.

OFFICERS.

President	J. F. Roach, Sussex, N.B.
Vice-President	W. H. English, Harding, Man.
Secretary-Treasurer	J. E. Rettie, Toronto.
Executive Committee	J. F. Roach. W. H. English. P. J. McEwen, Wyoming. J. E. Brethour, Burford.
Auditor	G. de W. Greene, Toronto.

Directors.

G. H. Hutton, Lacombe, Alta.
A. G. Marshall, South Westminster, B.C.
W. H. English, Harding, Man.
J. F. Roach, Sussex, N.B.
Frank Byrne, Charlesbourg, Que.
M. Ste. Marie, Compton, Que.
Philip Leech, Baring, Sask.
J. E. Brethour, Burford, Ont.
P. J. McEwen, Wyoming, Ont.
H. M. Vanderlip, Cainsville, Ont.

Record Board.

H. German, St. George, Ont.
J. D. Brien, Ridgetown, Ont.
J. E. Brethour, Burford, Ont.
John I. Flatt, Hamilton, Ont.
M. W. Miller, Brome Centre, Que.
Wm. Jones, Mount Elgin, Ont.
H. M. Vanderlip, Cainsville, Ont.

Representative Eastern Canada Live Stock Union: J. E. Brethour, Burford.

Representative Western Canada Live Stock Union: W. C. McKillican, Brandon, Man.

Representatives Royal Agricultural Winter Fair: J. F. Roach, Sussex, N.B.; S. Dolson, Norval; Wm. Jones, Mt. Elgin.

Representatives Central Canada Exhibition: J. I. Flatt, Hamilton; D. D. Gray, Ottawa; M. McCullough, Ottawa.

FINANCIAL STATEMENT.

Of the Canadian Swine Breeders' Association, for the Year Ending December 31st, 1919.

Receipts.

Cash on hand as per last report	$6,961 86	
Registrations	10,747 87	
Memberships	3,606 00	
Interest	77 63	
Total		$21,393 36

Expenditures.

Directors' expenses	$1,144 60
Postage	100 00
Grants:—	
Ontario Swine Breeders' Association	1,326 25
Alberta Live Stock Association	441 07
Manitoba Swine Breeders' Association	520 00
Maritime Swine Breeders' Association	157 08
Saskatchewan Swine Breeders' Association	857 35
Alberta Provincial Swine Breeders' Association	441 07
Quebec Swine Breeders' Association	1,032 24

Record Office, for salaries, 1919	$4,800 00	
Record Office, balance due on expenses, 1918	1,274 16	
Hotel Carls-Rite, rental of room	20 00	
Auditor	5 00	
Reporter at annual meeting	19 00	
Membership fees for Eastern and Western Live Stock Union	25 00	
Printing records	7,038 60	
Printing notices and ballots	131 25	
Miscellaneous	18 00	
Cash on hand	2,042 69	
Total		$21,393 36

J. E. Brethour,
President.

R. W. Wade,
Treasurer.

CHAIRMAN'S ADDRESS.

The Chairman, Mr. J. E. Brethour, in the course of a short address brought to the attention of the meeting certain important facts with reference to the swine industry in the following:—

Although I am not President, I should like to have prepared some matters that I believe are of very great importance, at present. One serious problem is the very extensive decrease of our swine population. There are reasons for this, though I will not deal largely with the causes because I believe some resolutions will be introduced in connection with this subject, and no doubt you will have an opportunity of giving an intelligent vote as to what the cause really is. As far as the breeders of pure-bred stock are concerned, I believe they have perhaps their usual number of thoroughbred stock on hand, and I think that is very wise because I believe there is going to be a large amount of business during the next few months. This has been prophesied for some time, but there is a strong feeling at present with the average farmer—the man who is breeding stock for commercial purposes—to improve the quality of his breeding stock, and that may have had something to do with the selling of a large number of brood sows of grade and inferior types that were disposed of last fall. I think perhaps the farmers are coming to understand that with the high price of feed and the high cost of production they must use not only the best quality of animals for this purpose, but they must have their hogs prepared properly for the market in order to meet the demands of consumers. From investigations I have made and enquiries at the various packing houses I am very glad to find that the general trend in Ontario and Canada generally during the last year or two is upwards as to quality. The packers tell me there are about 81 or 81 per cent. of all the pigs they receive that are classed as number one. This is gratifying to the breeders in general, and I believe the breeders of pure-bred stock are largely to be credited for this condition. I am glad also to know that I am justified in making the statement that the breeders of pure-bred stock have quite a large number of their hogs on hand to meet any demand that may come forward in the immediate future. I would like to mention a matter that may not come out in discussion, and that is, that there is a general condition of wonderment among the various producers of market hogs as to why hogs should be selling at such a low price when the cost of production is so very high. That condition is brought about by the present state of the English market which we may call artificial: that is, the Imperial authorities are fixing the price at which our hogs go into their market, and this prevents any competition as to price in that market; and unfortunately the price is so fixed that our Canadian packers can get very little advantage of the increased quality which our hogs would command in an open English market. This is an unfortunate condition for two reasons; first, it has the effect of causing a feeling among our breeders who do not make a careful study and look ahead in the market, that quality does not count; and secondly, I think it would have the effect of decreasing production. I am sorry to say that the effect of this regulation is largely responsible for the price we are receiving for hogs to-day. Another condition which has partly brought about this situation I will merely touch upon, because it will be brought out through a resolution; that is, the action of the Board of Commerce. I know from personal experience that the action of that Board at that time knocked my business down 75 per cent. in a two months' period; that is an actual fact. Of course I will not lay the charge against the Board of Commerce, but I will say that their action at that time created that condition of unrest among the farmers so that they felt that there was no fuure for the live stock business. If the Board of Commerce wanted to regulate the price of pork in this country I think the producers should have been consulted in the matter, and the cost of production should perhaps have been taken into account. I am just throwing out these few suggestions, and I know they will be enlarged on later, and I feel that they will be broadened out as the discussion proceeds in this meeting.

GENERAL BUSINESS.

The Committee appointed to confer with the American Berkshire Association with a view to arranging for the reciprocal registration of Berkshires between the American and Canadian records reported the following agreement:—

The Canadian Swine Breeders' Association, represented by its President, H. M. Vanderlip, its Secretary, R. W. Wade, and the Accountant, Canadian National Live Stock Records, John W. Brant, in conference at the Palmer House, Chicago, March 22nd, 1919, with the American Berkshire Association, represented by its Secretary, F. S. Springer, to facilitate the registration of Berkshire Swine, agreed as follows:—

1. Animals from the United States, American bred or imported from Great Britain, sold to a resident of Canada must be recorded in the American Berkshire Record in the name of the Canadian purchaser. American certificate of registration must give date of sale and delivery and, in the case of females, service certificates, if bred. It is understood that animals, on entering Canada, must be recorded in the Canadian Swine Breeders' Record.

2. Animals from Canada, Canadian bred or imported from Great Britain, sold to a resident of the United States must be recorded in the Canadian Swine Breeders' Record in the name of the American purchaser. Canadian certificate of registration must give date of sale and delivery and, in the case of females, service certificates, if bred. It is understood that animals, on entering the United States, must be recorded in the American Berkshire Record.

3. It is understood that the recording of ancestors to complete pedigrees is to be discontinued immediately by the American Berkshire Association and the Canadian Swine Breeders' Association, respectively.

4. It is further agreed that the Canadian Swine Breeders' Association will not accept for record animals farrowed in the United States, unless such animals are first recorded in the American Berkshire Record.

5. It is further agreed that the American Berkshire Association will not accept for record animals farrowed in Canada, unless such animals are first recorded in the Canadian Swine Breeders' Record.

Approved, American Berkshire Association, per F. S. Springer, Secretary, December 2, 1919.

This agreement met with the unanimous approval of the meeting.

It was moved by Mr. W. A. **Wallace**, and seconded by Mr. R. **Honey**, "That this Association endorse the Resolution *re* turning over to the Department of Agriculture the administration of the law with regard to mill feeds." Carried.

It was moved by Mr. W. F. **Wright**, and seconded by Mr. F. **Byrne**, "That the representatives to the Eastern and Western Canada Live Stock Unions be instructed to see that their respective Unions send representatives to the meeting at Ottawa dealing with the new Live Stock Contract in order to protect the interests of the stockmen." Carried.

At the suggestion of the Chairman, the meeting unanimously endorsed the action of the Secretary in his work in connection with the Board of Commerce.

It was moved by Mr. P. J. **McEwen**, and seconded by Mr. J. F. Ritchie, "That the resolution advocating that one or more practical agriculturists be added to the Board of Commerce be endorsed." Carried.

The Chairman, who was the representative of the Association on the Record Board, brought to the notice of the meeting the fact that, owing to increased cost of office help and increased cost of material and printing, the revenue of the Association was becoming alarmingly small and, in this connection, a recommendation from the Board of Directors was placed before the meeting. Discussion followed. It was moved by Mr. **Henry Capes**, and seconded by Mr. S. **Dolson**, "That the report of Directors be adopted." Carried.

It was moved by **Mr. Wm. Jones**, and seconded by **Mr. P. J. McEwen**, "That the grants to Provincial associations be given at the rate of one dollar per paid-up member." Carried.

Mr. J. O. **Duke**, in an address, referred to the Chairman's Address on the Swine Industry and acquainted the meeting with some of his own experiences, as follows: The President in his opening address mentioned the fact that the number of hogs was decreasing throughout the Province of Ontario and the Dominion of Canada, and he mentioned several things that were bearing on that subject over which we have no control. However, there are two or three little items that every person who raises hogs knows. One is that the profits or losses are in very small fractions. The cost of production is about equal to the selling price, sometimes a little more, so every small item of reduction in the cost of feed is very essential. I brought up one matter last year, and have tried several times to get the matter through, and that is, the freight rates on hog feed. I have frequent occasion to buy carloads of cheap corn, and I find that it is in such a condition that often it is impossible to shell it; it has to be shipped on the cob, otherwise it would spoil. If Mr. Brethour wanted a carload of that corn from me on the cob he would have to pay twice as much as if it was shelled, and twice as much to ship it to different places in the United States. I feel that the Canadian hog growers are at a disadvantage in that respect. Last year and this year I bought corn and shipped it thirteen miles, and paid as much as I did for the same kind of corn from a distance of 500 miles in the United States.

I think the railroads in this country are holding too high a hand in this matter, and that we should be able to ship feed in this country as cheaply as we could if we lived in the United States. Of course, that is a small matter, but it amounts to considerable with people situated as I am, for I buy all my feed. I shipped a carload of corn this year thirteen miles and paid ten cents a hundred, and I have a carload being shipped now 28 miles and I pay ten cents a hundred on that corn; that is as much as I would pay if I shipped from Chicago to Detroit. That is not a reasonable charge. Another thing I would like this Association to take up and act upon is the health of animals. I have many friends who are large hog raisers in the United States, and they say they would not undertake to raise hogs under the same conditions as I am. I purchase large numbers of hogs, and try to fatten them by the thousand every year, and I have no way of insuring them against hog cholera. My friends in the United States can sell me hogs that they can guarantee to be immune from hog cholera. We do not seem to take advantage of the progress that is being made in combatting hog cholera. I think this Association should go on record as being in favor of up-to-date methods of handling hog cholera. Those are the two items I would like to bring before the Association and have them express a favorable opinion on them.

MR. CARMICHAEL: At this late hour I will not take many minutes in speaking to you. I come here as Secretary of the National Swine Growers' Association, which has headquarters in Chicago. We are working for the promotion of the swine industry, particularly in the United States. We are working for all breeds, as well as for the man who is raising hogs for market. We try to know no particular creed, and no particular breed, but hogs and hog men, and are working for their interests; I came over here to see what you people were doing, and to offer you our assistance in any way that we can possibly help you. If there is anything that we have learned how to do we are very glad to help you to do the things that way. Whenever I go to any place I always learn something from the people with whom I come in contact. Many of the problems which we are taking up are the same general type of problems which you have been discussing here this evening. We have a little different arrangement so far as regards cholera, because we have separate record associations for each of the different breeds, and those record associations are under what we might call private ownership They are not exactly private ownership; they are corporations; stock in the corporation is owned by a breeder, and there are several thousand breeders owning stock in most of the different corporations, and they work together through an executive committee and a permanent secretary, with an office force which records those hogs and issues herd books separate for each particular breed; so we have it quite different from what you have here. Under the auspices of the National Swine Growers' Association we have our National Show. It is an annual event. The fourth show was held last October in Iowa, and will be held there again this year, beginning the 4th of October. We would be very glad to have any of you come to that show if you can possibly get there. We have not as many hogs on exhibition there as we have at some of the state fairs throughout the country, but we do have the very best class of hogs which can be found in the United States. Now, with us the hog business, particularly the breed hog business, is on the boom right now. We have never seen such prices for breed stock as we are getting to-day. A good bit of that traces back to the drop in hog prices last September and October; in fact, that drop began along in July, and they went down and down, and we did not know how far they were going. They went down so low, in fact, that a great many of our hog men sold off their brood sows and their culls, and the cull sales that we held in the latter part of October and in November were very poor; the farmers did not care to buy them at any price above market. We are fortunate now with a market having an upward tendency, that those men who sold their brood sows last fall are back in the market; they want to get the stuff. We have set some record prices this winter, which I personally think are too high; nevertheless, they have been set. At a sale in Kansas City about two weeks ago a man sold 48 head of brood sows for an average of $3,100, one sow selling at $17,200. You might say that is a price which is away out of reason, but that same sow produced pigs which sold in the year previous to that for $52,000. As I said, I think those prices are too high, nevertheless those are the prices they are getting. One buyer of a breed which I expect is rather unknown to a good many of you sold recently at a reported price of $35,000, which I say again is too high; but that is the way they are going. It shows that they are after the hogs. They want the good brood sows; they want the good boars; and we have never enjoyed such good trade as we have at the present time. Recently there have been a number of shipments from the United States to South America. To-morrow there will be 30 sows leave New York for Buenos Ayres, and there are going to be quite a number of shipments this summer, they are having no difficulty in finding herds from which they can get hogs to ship to the Argentine or any other place. So we think we have made a big advance in that line. We know that our men are raising a much better type of hogs than they were raising a few years ago, and still annually we do not record in the record associations of our country over one-half of one per cent. of the number of hogs which we raise. In 1918 we recorded considerably less than one-half of one per cent. of all the hogs which we raised that year.

Ontario Swine Breeders' Association

The Annual Meeting of the Ontario Swine Breeders' Association was held in the Hotel Carls-Rite, Toronto, Tuesday, February 3rd, 1920, at 10.00 a.m.

OFFICERS.

President	WM. JONES, Mount Elgin.
Vice-President	CECIL STOBBS, Leamington.
Secretary-Treasurer	J. E. RETTIE, Toronto.
Executive Committee	H. A. DOLSON, Cheltenham. W. F. WRIGHT, Glanworth. WM. JONES. CECIL STOBBS.

DIRECTORS.

A. LEITCH, O.A.C., Guelph.
WM. JONES, Mount Elgin.
RUSSELL TEMPLAR, Burford.
J. K. FEATHERSTONE, Streetsville.
H. A. DOLSON, Cheltenham.
W. W. BROWNRIDGE, Georgetown.
GEO. DOUGLAS, Mitchell.
W. F. WRIGHT, Glanworth.
CECIL STOBBS, Leamington.
GEORGE GOULD, Essex.

REPRESENTATIVES TO FAIR BOARDS.

Canadian National Exhibition.—J. K. FEATHERSTONE.
Western Fair, London.—W. F. WRIGHT, GEORGE DOUGLAS.
Ottawa Winter Fair.—GEO. R. THOMAS, Ottawa; J. W. BRANT, Ottawa; GEO. ROTHWELL, Ottawa; J. C. STUART, Osgoode.
Ontario Provincial Winter Fair.—J. D. BRIEN, J. I. FLATT, P. J. MCEWEN, WM. JONES.
Royal Agricultural Winter Fair.—WM. JONES, P. J. MCEWEN, CECIL STOBBS.
Chatham Winter Fair.—LEM. MACFARLANE.
Eastern Canada Live Stock Union.—J. I. FLATT.

FINANCIAL STATEMENT

OF THE ONTARIO SWINE BREEDERS' ASSOCIATION, FOR THE YEAR ENDING DECEMBER 31ST, 1919.

RECEIPTS.

Cash on hand as per last report	$380 77	
Grant, Canadian Swine Breeders' Association	1,326 25	
Total		$1,707 02

EXPENDITURES.

Grants:—		
Ottawa Winter Fair, 1918	$75 00	
Western Fair, London	60 00	
Canadian National Exhibition	120 00	
Ontario Provincial Winter Fair	75 00	
Ontario Berkshire Breeders' Society	223 48	
Ontario Large Yorkshire Swine Breeders' Society	521 57	
Printing	4 00	
Auditor	3 00	
Directors' expenses	545 90	
Hotel Carls-Rite, rental of room	19 00	
Membership fee, Eastern Canada Live Stock Union	25 00	
N. R. Butcher, reporting annual meeting	26 20	
Cash on hand	8 87	
Total		$1,707 02

WM. JONES,
President.

R. W. WADE,
Treasurer.

ADDRESSES.

Wm. Jones, Mt. Elgin: The condition of things in the organization is unique in its history. The year was one of great promise to the Association and to Ontario breeders especially, until a certain stage of the season since which time the business seems to have all gone the other way. The conditions are such that I do not think we can censure anybody very much. We are passing through such circumstances that it will take a long time to reduce the present condition of affairs to normal in this country. As swine breeders, we have suffered considerable loss through the action of a Board, whose intentions were possibly good, and I believe it is better to bear that loss and to carry on loyally and preserve the interests of our Association and discharge our fair duty to the citizens of this country. For that reason, I am inclined to say that as an Association we should not criticize in any way that Board which has met with so much criticism in reference to this matter. Up until a certain date we, who are engaged in the swine industry, had possibly the most profitable season we ever had. Feeding pork in the early part of this season when it was being sold to the packer at from 20 to 24 cents; with foodstuffs 20 to 25 per cent. less in price than to-day, was a far better proposition than selling pork to-day with foodstuffs 25 per cent. greater in price; but I think it is better to carry on as we are, trusting in the future, and taking the bitter with the sweet. I am sorry that the Association has shown that it is running almost at a financial loss and that our finances are in a depleted condition and consequently that we will have to guard against any further reduction of our finances by restricting our efforts very much.

Mr. Angus A. Worlich, Manager of the Merchants Bank of Canada, London: A little over a year ago, the Merchants Bank established in a small way a rural service in connection with the bank and very soon it proved how valuable it could be to farmers, so much so, that last August central offices were appointed at London for Ontario and at Regina for the West and every branch of the bank is made a branch for this rural service department. The object is to bring the farmer and banker together so that farmers will co-operate with their bankers and establish Pig Clubs, Sheep Clubs, Calf Clubs and such like. This is not a new work but it has been sadly neglected. We have here for distribution leaflets giving the rules of these Clubs, and we are launching an extensive campaign this spring for the work. We want to encourage the raising of pure bred stock, and I came from London chiefly to let you know where we are located, and to tell you that we want a list of every breeder of pure bred live stock in Ontario, with their names and addresses and what they specialize in. I ask your Secretary to send in the list of names and addresses, so that we may co-operate in this work.

Mr. H. S. Arkell, Dominion Live Stock Commissioner: Respecting the general conditions, and having reference to the hog industry in Canada, I am glad to have these words from a representative of the Merchants Bank, and would like to say that the interest which is being evidenced by that bank amongst others is something of which this Association and all the Live Stock Associations may be proud. I need not go into the history of the development that has taken place, although I am pretty familiar with it. Take Western Canada, where I have met the confreres of your speaker here, one located at Calgary and the other at Regina; they are doing in Western Canada the same work that he is doing here. I have had the opportunity of meeting the manager, and I know for a fact that the Merchants Bank, amongst others, is developing an intense interest and carrying out a very practical programme in connection with the development of the live stock industry. This is something of which the farmers in Canada might well be proud. It is absolutely significant of the turn which is taking place in this country respecting the revenue which is to be derived by the country from the farmers. It might be well to go into that in brief fashion, but I think I shall not do that at the moment except to say this, that with the exchange situation as it is between North America and European countries, Canadian manufacturers are going to find it very difficult indeed to sell their products; to continue the exportation at anything like the same level that has been the case in the past; and if Canada is to pay her debts; if she is to meet her obligations and develop the prosperity which will make for comfortable homes and good living, it must be on the basis of what can be returned from the farmers of this country. I do not know that we can emphasize that fact too greatly or overestimate the significance of what has just been communicated to the meeting in regard to the interest being taken by the banks, which indicates the importance of your position and the absolute necessity for every man to study the financial situation of the country and link his business with it from a standpoint of the production of revenue. Regarding the hog situation, I know as you do, the difficult period you have passed through during the year. It may be worth while to explain briefly the reason for the high cost of feed as compared with the price of pork. I do not know that it is appreciated that the feed shortage in Europe is one of the outstanding facts of the economic situation in that country—feed shortage as well as food shortage—that was impressed upon me in connection with my visits there during the past year. It is applicable not only to Great Britain but to France as well where hay has gone as high as $100 a ton, and to all the other European countries where it was expected that there would be a bountiful harvest this year—when the Balkan countries were unable to obtain seed—when Greece was unable to obtain seed, and when they had a drought in France and Britain which was exceptional and militated against the production of ordinary feed or normal conditions; you will understand the reason for the demand from North America and the reason also why food or feed has been so dear during the past year. There is another line of facts bearing in that direction. If feed has been so dear, it must be clear that the production of hogs will be retarded. Take the situation in Holland, the situation in Denmark, the situation in Ireland and the United Kingdom generally. I know for a fact that hog production in all those countries is being held back because of the shortage of feed and its high price. Now that will indicate in a word why wheat has continued at its very high level and why feed has also remained at its very high level during the past year. Why is it that hogs have gone down in price? Why is it that other meats have gone down in price? Simply for the reason that there has been an abnormal production in the United States and in Canada—to such an extent that in August last, had the British Ministry of Food not taken control there would have been such a slump in prices—I have this from the best authority—that the hog industry would have met the most serious crisis perhaps in its history. The British Ministry of Food took control, steadied the market, and while the price receded, still it was held as against the slump that would otherwise have occurred. In addition to that, Great Britain was able to buy her meats in Argentine and in Australia, countries that had not participated in the heavy exportation during the war, and at a price that steadily lowered the market. Now that indicates in a word, without going into detail, how meats have receded in price and why food products have continued at the high level they have during the past year.

What is the other point? I believe that the food situation as I have just illustrated it represents the key to our future consideration of costs. I do not think that it can be gainsaid that the tendency will be for the specialization of the hog industry until Holland and Denmark and Ireland and the United Kingdom will again be able to produce feed in such abundance as to enable them to increase their hog supply. Until that time approaches, I doubt if hogs can go to anything like low levels. We may, as during the past year, have temporarily a rather difficult period to go through, but I am satisfied that the tendency will rather be to stabilize the situation, perhaps rather upward than downward, and that being the case, there is wisdom in the continuation of our business with that view. Just one further word, the Canadian pig has found a place in the British market that is exceptional. When Danish hogs were being sold to Germany, and Denmark was reducing her supplies to such an extent that she was practically off the London market; when Holland was unable to send supplies to the United Kingdom; when Ireland and the United Kingdom itself were unable to meet its own requirements; what happened? The turn of the British market—the turn of the whole British market—was to North America, and then you had the comparison very definitely brought before the people of Britain—Canadian bacon as against American bacon. I need not go into detail to explain that Canadian bacon reached such a reputation during the past three or four years that it will be a long time before American bacon can compete on anything like the same basis. As a matter of fact, Canadian bacon reached the top of the market during the past months, and were we able to send forward bacon in big supply, I believe we could dominate the situation just as Denmark did before the war. That is the opportunity that lies before Canada. It may be a difficult thing for us to achieve, but I say this frankly, that the opportunity exists if we can in any way find some means of attaining that end.

The Ontario Large Yorkshire Swine Breeders' Society

The Annual Meeting of this Association was held at the Hotel Carls-Rite, Toronto, February 2nd, 1920.

OFFICERS.

President	R. Garbutt, Belleville.
Vice-President	G. Barbour, Crosshill.
Secretary-Treasurer	J. E. Rettie, Toronto.
Executive Committee	R. Garbutt, G. Barbour, J. C. Stuart, Wm. Jones.

DIRECTORS.

G. Barbour, Crosshill.
J. E. Brethour, Burford.
H. A. Dorrance, Orangeville.
J. K. Featherstone, Streetsville.
R. Garbutt, Belleville.
Wm. Jones, Mount Elgin.
J. C. Stuart, Osgoode.

REPRESENTATIVES TO FAIR BOARDS.

Canadian National Exhibition.—J. E. Brethour.
Central Canada Exhibition.—J. C. Stuart.
Royal Agricultural Winter Fair.—R. Garbutt, J. C. Stuart, J. E. Brethour.

FINANCIAL STATEMENT.

OF THE ONTARIO LARGE YORKSHIRE SWINE BREEDERS' SOCIETY, FOR THE YEAR ENDING DECEMBER 31ST, 1919.

RECEIPTS.

Cash on hand as per last report	$459 72	
Interest	13 30	
Total		$473 02

EXPENDITURES.

Grants:—		
Western Fair, London	$50 00	
Canadian National Exhibition	100 00	
Ontario Provincial Winter Fair	125 00	
Auditor	2 00	
Cash on hand	196 02	
Total		$473 02

J. C. Stuart,
President.

R. W. Wade,
Treasurer.

The Ontario Berkshire Breeders' Society

The Annual Meeting of this Association was held in the Hotel Carls-Rite, Toronto, on Monday, February 2nd, 1920.

OFFICERS.

President	H. A. Dolson, Cheltenham.
Vice-President	H. B. Jeffs, Bond Head.
Secretary-Treasurer	J. E. Rettie, Toronto.
Executive Committee	H. A. Dolson, H. B. Jeffs, P. J. McEwen, W. W. Brownridge.

DIRECTORS.

Chas. Boynton, Dollar.
W. W. Brownridge, Georgetown.
H. A. Dolson, Cheltenham.
H. B. Jeffs, Bond Head.
P. J. McEwen, Wyoming.
F. Teasdale, Concord.
Adam Thomson, Stratford.

REPRESENTATIVES TO FAIR BOARDS.

Royal Agricultural Winter Fair.—H. A. Dolson, W. W. Brownridge.
Central Canada Exhibition.—W. D. Jackson, Carp.

FINANCIAL STATEMENT.

OF THE ONTARIO BERKSHIRE BREEDERS' SOCIETY, FOR THE YEAR ENDING DECEMBER 31ST, 1919.

RECEIPTS.

Cash on hand as per last report	$148 86	
Interest	3 55	
Debit balance	74 59	
Total		$227 00

EXPENDITURES.

Grants—		
Central Canada Exhibition	$25 00	
Western Fair, London	50 00	
Canadian National Exhibition	75 00	
Ontario Provincial Winter Fair	75 00	
Auditor	2 00	
Total		$227 00

H. A. Dolson,
President.

R. W. Wade,
Treasurer.

The Canadian Sheep Breeders' Association

The Annual Meeting of the Canadian Sheep Breeders' Association was held in the Hotel Carls-Rite, Toronto, at 8.00 p.m., Tuesday, February 3rd, 1920.

OFFICERS.

President	W. A. Dryden, Brooklin.
Vice-President	James Bryson, Brysonville, Que.
Secretary-Treasurer	R. W. Wade, *Toronto*.
Executive Committee	W. A. Dryden, Jas. Bryson, Lt.-Col. Robt. McEwen, London; J. D. Brien, Ridgetown; R. W. Wade, Toronto.

Directors.

R. Knight, Calgary, Alta.
S. F. Tolmie, Victoria, B.C.
George Gordon, Oak Lake, Man.
W. B. Bishop, St. John, N.B.
J. D. Brien, Ridgetown, Ont.
W. A. Dryden, Brooklin, Ont.

James Bryson, Brysonville, Que.
Arsene St. Denis, St. Norbert Sta., Que.
Victor Sylvestere, St. Hyacinthe, Que.
F. T. Skinner, Indian Head, Sask.
Robt. McEwen, London, Ont.
Jas. Snell, Clinton, Ont.

Representatives to Fair Boards.

Canadian National Exhibition: W. A. Dryden, Brooklin.
Central Canada Exhibition: W. A. Wallace, *Kars;* J. A. Muir, Ottawa.
Royal Agricultural Winter Fair: W. A. Dryden, Brooklin; Jas. Douglas, Caledonia; Robt. McEwen, London.

Representatives.

Canadian National Record Board: Jas. Douglas, Caledonia; W. A. Dryden, Brooklin; Robt. McEwen, London; Jas. Snell, Clinton.
Eastern Canada Live Stock Union: J. D. Brien, Ridgetown.
Western Canada Live Stock Union: J. W. Lenton, Calgary, Alta.
Auditor: G. de W. Green, Toronto.

FINANCIAL STATEMENT.

Of the Canadian Sheep Breeders' Association, for the Year Ending December 31st, 1919.

Receipts.

Cash on hand as per last report	$5,424 81	
Registrations	6,965 95	
Memberships	2,336 00	
Interest	47 35	
Total		$14,774 11

Expenditures.

Directors' expenses	$832 50
Grants—	
Alberta Live Stock Associations	196 48
Ontario Sheep Breeders' Association	1,587 45
Manitoba Sheep Breeders' Association	273 85
Maritime Sheep Breeders' Association	195 78
Saskatchewan Sheep Breeders' Association	306 33
Alberta Provincial Sheep Breeders' Association	196 49
Quebec Sheep Breeders' Association	1,152 49

Printing records	$3,409 89	
Printing notices, reports, etc.	49 75	
Postage	100 00	
Record office, balance expenses, 1918	1,122 53	
Auditor	5 00	
Hotel Carls-Rite, rental of room	20 00	
N. R. Butcher, reporting annual meeting	20 20	
Membership fees to Eastern and Western Canada Live Stock Union	25 00	
Record office, conducting records, 1919	2,700 00	
Miscellaneous	5 20	
Cash on hand	2,575 17	
Total		$14,774 11

W. A. DRYDEN,
President.

R. W. WADE,
Treasurer.

ADDRESSES.

W. A. DRYDEN, BROOKLIN, PRESIDENT CANADIAN SHEEP BREEDERS' ASSOCIATION.

I believe that the breeders of sheep in Canada have reason to be proud of their position, both as to their Association and as to the condition of trade in sheep and the products of sheep. We have heard from time to time that while the war was on and wool was high, and all meat products were high, that there was no reason why sheep should not be a good paying proposition; but as soon as the war was over, wool would probably be the first thing to slump. A good many people thought that, but we have found that at the conclusion of the war it has had really no material effect on wool prices, or upon meat prices; in fact, they have had a tendency to stiffen rather than decrease in value. It is the opinion of many men who are in close touch with the wool trade and the meat business that the prospect in the future is that prices for these commodities cannot decrease, for the present at any rate, for an indefinite period of time. No one wishes to say, although some people do suggest it, that for the next five years prices of all farm products must remain high. If that is the case, every product of sheep will be in that class.

One of the reasons for this prediction, which seems to be well founded, is that during the war there has been such a great wastage of live stock of every kind, and it is going to take years and years to get back to our normal holdings, so that we can produce annually the necessary products to feed and clothe the people of the world. There have developed in the wool trade—I happen to know something of the trade in that line—rather peculiar conditions. Switching from war conditions to peace has meant that in wool alone the demand has shifted from one quality to another just about as quickly as could be imagined.

Now, I believe that when we settle down, the whole thing will be just as satisfactory as any of us could wish. The demand will be stable, I believe, for many years, and the prospects for men engaged in the sheep business were never brighter than they are to-day. It seems to me that the Canadian Stock Breeders' Association might find some work to do to popularize sheep breeding more than it has been done in the past. I am not saying efforts have not been made through one channel or another, but it seems to me that there is an opportunity to do a good deal of work to show farmers and breeders that they have an opportunity to do something with sheep, and that sheep may be made use of in their farm operations, especially in districts where farming is followed along diversified lines. It seems to me that if farmers could be brought to a realization that sheep should be a factor in their organization, that more sheep could be kept in the country; I am quite sure if they were kept in greater numbers on our small Canadian farms, that our system of agriculture would be improved, and that the products in grain and every other line produced on the farm would be increased just because sheep were kept on those farms.

I know it is a very important consideration in the Old Country. Those of you here who are Old Country born, and those of you who have spent time in the Old Country on visits for pleasure or for business, will remember what a large number of sheep you find on the farms over there. They have no better land, they have no better climatic conditions, they have no conditions at all, on the whole, which approach the conditions for sheep keeping in Canada. I think in many cases their soil is much worse, and sometimes their climate is much more to be feared as far as sheep keeping is concerned, yet we find that sheep are a part of the farm system. They believe that they must run sheep on their land to improve the soil condition, to improve and increase the fertility in their land, and to help to eat weeds and undesirable food about the place. They believe they pay from a point of view that even if they do not get direct returns in dollars and cents, still they are an item that must be kept about the farm, even as some of our lesser lights believe and have faith and think that they must keep a dog on the farm. (Laughter.)

I would like to see this organization undertake to develop a little more interprovincial trade. I believe that in parts of Canada both east and west there is a demand for, or at least there is an opportunity to create, a demand for rams of all breeds. I believe that if people were breeding commercial sheep in outlying districts, both east and west could be engaged to use pure-bred rams of some of the distinct breeds. In a general way, I think the pure-bred breeders in Canada would not be producing enough rams to go around, if we could only get them started to use them. I believe that would be shown definitely if we would work out some system to put our rams where the people are who know enough to use them.

It is an actual fact, I believe, that in the western provinces many of the sheep men naturally turn to the States across the border for their supplies of ewes and rams, and I believe it is very much to the discredit of everybody concerned that thousands of rams across the border are not pure-bred rams, but common thugs, cross-breds and mongrels of every description. They get them, I understand, and pay as high as $50 and $60 apiece for these most undesirable sheep. They do not do this altogether because they want to do it; they probably believe that these rams are cheaper than pure-bred rams, but I do not think they necessarily should be. I understand that a trade of that kind has been carried on to a very large extent; it seems to me that some effort might be put forth through the officers of this Association to stop this trade, to educate the people, or to put pure-bred rams where they may be secured, and where the men who need the use of them may have an opportunity to get rams which will introduce some improvement in their breeding operations.

A committee was appointed to meet with the American Shropshire Breeders' Association, representing this organization, seeking to develop a basis for reciprocity, so to speak, in pedigree registrations between Canada and the United States. It is my opinion that so far as pure-bred live stock breeding is concerned, there should not be between Canada and the United States even that imaginary boundary line which we have. It seems to me that the breeder of pure-bred live stock should have every opportunity and every facility at his hand to buy rams or breeding stock of any kind where he thinks he can get the best article for the money which he wishes to pay. It seems to me that everything should be done to facilitate freedom of action, not only of buying and selling, but in the recording of our animals as well.

The committee met in Chicago the first week in December at the time of the International Show, and finally ratified an agreement with them for the recording of Shropshire sheep. I believe the matter was first brought up at a meeting last April in Chicago, at which I was present, and there was no difficulty whatever in securing a ratification of a resolution regarding this matter. It was allowed, however, to stand over, because I did not have the necessary detailed information to discuss it with them and arrive at a definite conclusion. We decided, therefore, to let it stand over until the International, and I believe that the best way to bring it before you for your information would be to read the five points which we agreed upon. (Reading from paper.)

If there are any questions that anybody would like to ask in regard to these clauses in this agreement, I should be very glad to hear them. It appears to me that this whole arrangement will simplify matters as between Canadian and American registrations very, very greatly. We found before in recording Shropshire sheep in the United States, where we had to record ancestors in their books to bring them up to date, that sometimes it was almost an impossibility to induce dealers to get signatures of ancestors that passed through the United States, and of people who had been dead for years and years back. It was a most trying and exasperating procedure. This will do away with all of that. They accept the Canadian certificate, which first must go to Ottawa and have the name of the American producer and the ram and the ewe from which it is bred. That will complete the information, so in the case of a ewe which has a pair of lambs, next spring, it is not necessary for him to ask by what ram these were sired, because he will be able to sign his own application as the owner, who is in possession of a lamb sired by a ram which has already been recorded.

A Member: What time does this go into effect?

The President: The 1st of January, 1920; it is already in effect.

A Member: What is the cost of recording? Is one just a transfer, or do you have to pay for a certificate in that Association?

The President: Well, I am not sure whether that was definitely specified or not. It was talked about, but I think the understanding was that a lamb would be recorded in this Association as a Canadian born lamb, and the records would be kept here. It may or may not be sold to go to the United States.

A Member: Will there be a transfer fee?

The President: I expect they will charge the regular fee for registration, fifty cents.

The Secretary: It will be transferred in this country.

A Member: Has anything been done about similar reciprocity in other breeds besides Shropshires?

The President: Nothing definite, that I know of. But I believe that if this is a desirable working agreement the time is very opportune to work with the other associations and get a somewhat similar method. The Swine Breeders' Association have practically the same arrangement as this, that is, the Berkshires Breeders' Association.

Mr. Gordon: I would like to say that question was brought up at Brandon at our annual meeting, and we have a resolution along these lines from Manitoba.

RECIPROCAL REGISTRATION OF SHEEP.

(COPY OF AGREEMENT REFERRED TO IN PRESIDENT'S ADDRESS.)

The Canadian Sheep Breeders' Association, represented by its President, W. A. Dryden, and its Secretary, R. W. Wade, in conference at Chicago, December 1st, 1919, with the American Shropshire Registry Association, represented by its Secretary, Miss Julia M. Wade, and a committee, to facilitate the registration of Shropshire Sheep, agreed as follows:—

1. Animals from the United States, American bred or imported from Great Britain, sold to a resident of Canada must be recorded in the American Shropshire Registry Record in the name of the Canadian purchaser. American certificate of registration must give date of sale and delivery and, in the case of females, service certificates, if bred. It is understood that animals, on entering Canada, must be recorded in the Canadian Sheep Breeders' Association.

2. Animals from Canada, Canadian bred or imported from Great Britain, sold to a resident of the United States must be recorded in the Canadian Sheep Breeders' Record in the name of the American purchaser. Canadian certificate of registration must give date of sale and delivery and, in the case of females, service certificates, if bred. It is understood that animals, on entering the United States, must be recorded in the American Shropshire Registry Record.

3. It is understood that the recording of ancestors to complete pedigrees is to be discontinued immediately by the American Shropshire Registry Association and the Canadian Sheep Breeders' Association, respectively.

4. It is further agreed that the Canadian Sheep Breeders' Association will not accept for record animals lambed in the United States, unless such animals are first recorded in the American Shropshire Registry Record.

5. It is further agreed that the American Shropshire Registry Association will not accept for record animals lambed in Canada, unless such animals are first recorded in the Canadian Sheep Breeders' Record.

PARASITES IN SHEEP.

DR. HADWEN, HEALTH OF ANIMALS BRANCH, OTTAWA.

A few weeks ago Dr. Tolmie was discussing our work at Ottawa, and he asked me if I would come down and say a few words on Parasites in Sheep.

I am sorry to say that a great many of our sheep are full of parasites in this country. I expect many of you know it. We get the information at the laboratory at Ottawa from two sources. The first source of information is the specimens sent to us, of which we receive a great many directly from the farmers; secondly, we have a meat inspection service where thousands of animals are killed each year, and portions of carcasses are condemned on account of parasites. This seems to be a very great loss, and I think it is, to a very great extent, preventable.

You may be astonished to hear that in this city here there were seven thousand sheep killed, I think, within the last year; I have records of eighty-eight thousand sheep killed over the whole Dominion. Out of this seven thousand sheep there were just about four thousand of which portions were condemned and thrown away. Of course this is a very great loss.

These portions may be divided into three almost equal classes—the lungs, the liver, and the intestines. The intestines are very valuable for sausage cases, and I am told that sausage cases are worth about forty cents a pound. You will see how many sheep are infested with the nodule worm, which is the cause of the rejection of the intestines.

Another parasite we have very frequently which causes the condemnation of all these sets of lungs is the lung worm, of which there are two species; the livers are also largely parasitic. In the agricultural papers I have frequently seen articles about flukes, and we have not got inquiries about flukes from farmers and the treatment of them.

I am very glad to say you have no flukes in the east. You will not find the lesser fluke east of the Rocky Mountains; the only Province which has them is British Columbia. You have some parasites, however, which British Columbia has not. The distribution of parasites in Canada is quite uneven. In our laboratory, for instance, they have a worm there which causes a great deal of damage, and I think twelve thousand of the eighty-eight thousand were condemned on account of a tape worm which lives in the liver during one part of the year and in the small intestine during the other part; it is called the fringe tape worm. Evidently it does not seem to be frequent in Ontario, although it is very often brought in. I saw some sheep lately from Manitoba which had to be condemned on account of these parasites.

I think these are the worst ones you have to face; that is, the lung worm, the worm causing the nodules in the intestines, and the stomach worm, which is last but not least. I am sorry to have to say that the knowledge which has been gained about it is not due to our own efforts, but most of the information about the stomach worm comes from the United States. It does not seem to be very well known among some farmers.

The life history of this parasite has been worked out, and it is quite feasible now to keep your lambs free from them, or practically so. Evidently the preventive measures for stomach worms also apply to the lung worms and the worms in the intestines. The drug treatment for these parasites has been used quite largely in the United States with great success. It is a one per cent. solution of copper sulphate or bluestone, using about three ounces for a ewe and half the dose for a lamb. This will clear out these parasites very effectively, but that helps the animal after a great deal of damage has been done.

The damage from worms is very easy to recognize; they become anaemic, they do not grow well, and in fact, some of them die. In addition to this, if they are older animals the wool comes out, so you get a loss from that; they also lose flesh or do not put on flesh, as the case may be, which is another item of loss.

The eggs of these worms pass out with the sheep's manure and the parasite goes through a cycle on the manure. This cycle takes about fourteen days; therefore if you have plenty of land you can keep your sheep and lambs together and keep moving them on all summer at fourteen-day intervals, and the lambs will come out in the fall practically clear. Another way that is being used successfully is to separate the ewes from the lambs as soon as possible and graze them in separate pastures, having a common ground between. You have a field for each, and you allow them to meet on this neutral ground between, on which there is no vegetation, and the lambs get on very well. Of course, that is quite a trouble, but I presume it would pay very well.

If the lambs come early in the year the danger is not very great, because in the stables they do not get these parasites unless the stable happens to be very warm; but if you clean out your stable once a fortnight they will not get any parasites, although they get them grazing in common with the ewes. The most dangerous thing to do is to put lambs and ewes in a small field until they have eaten off the grass, put them on to another field, and then return them to that field during the season, because the parasites will be on every blade of grass all over that patch. After a thunderstorm they crawl up on the blades of grass and are all ready for the sheep and lambs. The damage to the lambs and sheep can be stopped if you put them in a stable. We occasionally get old sheep very heavily infested, put them in the stable, give them a little treatment, and they always improve if you feed them well. The reason is, that once you have stopped the animal getting a fresh dose each day, its body is able to fight those it has. It has got used to them, and consequently the balance is maintained. If it is picking up a little more each day, the sheep keeps on going down. That is one of the family of parasites we have to fight, and that idea of moving the sheep, keeping them on fresh ground, or keeping the lambs and ewes separate until the cold weather comes, is the method of getting rid of three of your worst parasites in the east here.

Of course I could go on, but it is getting late. There are a whole host of parasites which damage your animals very much. The grub in the head, the one caused by the bot fly, causes a very great deal more damage than we give it credit for. That grub living in the cavity in the front of the head, secretes toxic products which it eliminates as it lives there. We have tried some experiments with these grubs, and it only takes about one grub to kill a sheep, if you take the juice out of it and put it in the blood of the sheep. These grubs are full of the worst sort of poison to sheep.

I am sorry to say that we are hopelessly ignorant of many of these parasites. The sheep grub, for instance, we have been watching with great interest for the past year. We got heads regularly from the packing houses and examined them, and it looks almost as though those grubs have a two-year cycle, that is to say, they must live for two years. At the present time if you go to the abattoirs you will very likely find some minute grub evidently preparing to spend another season in the head of the sheep before it comes out. It is the only way to explain it, and it shows how much there is to be done in the study of parasitism. Another thing is the tape worm in sheep.

A Member: Can you cure the grub?

Dr. Hadwen: We have no cure once it is in there. If you cut open that lamb and put it away and look at it a year later, in the case of nodules you will find nodules there still.

A Member: The bluestone would have very little effect with the nodules?

Dr. Hadwen: It will clear out some of the old parasites. When we opened a sheep after giving it two treatments we got altogether, I think, twelve or thirteen parasites in the whole animal. That is perhaps a little lucky, but it clears them out pretty well. That sheep's intestines were a mass of nodules. Of course, the history of that worm is that the adults live in the large gut. The larvæ crawl up into the small gut and burrow into the wall.

A Member: Will this bluestone be a remedy for the nodule worm?

Dr. Hadwen: It would help, but if you can keep the lambs from getting infested from their mothers, and keep them changing ground, they will not have nodules; you will find them clear.

A Member: If you have nodules in your breeding ewes, will it show in a weakened condition, or will you sometimes find it in some of your best appearing sheep?

Dr. Hadwen: With all these parasites, the young animals suffer more than the old ones. It always hurts the young one more than it does its mother. The mother may be rolling in fat and the young one dying of parasites.

A MEMBER: You were speaking about changing them every fourteen days. How long does the parasite live on the grass?

DR. HADWEN: Oh, it will live for months, but it is doubtful if it will survive our severe winters here; but you cannot return them to the same pasture that same summer without danger.

A MEMBER: Then you would have to change them every fourteen days all season?

DR. HADWEN: Yes.

A MEMBER: That is practically an impossibility.

DR. HADWEN: It is being done.

A MEMBER: The chief preventative would be to keep them inside?

DR. HADWEN: Once you have got them where you can keep them in a separate field you can leave them there as long as you like, because they will not infect one another very much. It is the ewes you have to watch.

A MEMBER: Does the Government publish a bulletin on this?

DR. HADWEN: No, it does not. I came down to-day just to tell you a few things. I can only touch on a few points. It seems an occasion to mention a little about parasites, and I could go on a great deal longer, but I am afraid the time has gone too far. There are many other problems with respect to parasites that could be touched on.

A MEMBER: What is the best remedy for the tape worm?

DR. HADWEN: As far as tape worms go, we have no means of preventing animals from getting them at present. We know nothing about the intermediate host which carries them, and as far as the treatment is concerned, it has not been of the most satisfactory nature. Purgatives and so on are used, but they are not of great success in sheep.

A MEMBER: How young are lambs affected?

DR. HADWEN: Oh, it only takes a very few days to start them going. Just as young as he will nibble grass. Just as soon as he begins to take a mouthful of grass he is liable to become infected, but not until then.

A MEMBER: Will you please repeat the dose that you spoke of?

DR. HADWEN: It is a one per cent. solution of copper sulphate, bluestone; three ounces for a full-grown sheep and half the dose for a young one. Give it once, and perhaps repeat it in a month. Of course this is drenching the sheep. They must be left standing up and the head must be pressed forward, not raised, and it must be given as slowly as possible, because the liquid will then go into the true stomach where you want it, instead of into the paunch. If you give it in great gulps it will get on her lungs or else not reach the true stomach.

A MEMBER: If you still further dilute that with milk, would that weaken the effect of the bluestone?

DR. HADWEN: I do not think it would help it, and the sheep do not mind it, so I think water is probably the safest.

A MEMBER: How would you arrive at the dose?

DR. HADWEN: One ounce in one hundred ounces of water, or however you like to arrive at it.

The Ontario Sheep Breeders' Association

The Annual Meeting of this Association was held in Toronto, February 4th, 1920.

OFFICERS.

President	**Geo. L. Telfer**, Paris.
Vice-President	**E. Robson**, Denfield.
Executive Committee	**Geo. L. Telfer**, Paris; **E. Robson**, Denfield; **Jas. Douglas**, Caledonia; **W. Whitelaw**, Guelph.
Secretary-Treasurer	**L. E. O'Neill**, Toronto.
Auditor	**F. C. Hart**, Toronto.

DIRECTORS.

Cotswolds	**G. H. Marks**, Little Britain.
Leicesters	**James Douglas**, Caledonia.
Lincolns	**E. Robson**, Denfield.
Oxfords	**J. E. Cousins**, Harriston.
Shropshires	**W. H. Beattie**, Wilton Grove.
Dorsets	**Cecil Stobbs**, Leamington.
Hampshires	**Geo. L. Telfer**, Paris.
Suffolks	**James Bowman**, Guelph.
Southdowns	**J. A. Calvert**, Queenston.

GENERAL DIRECTORS.

H. Lee, Highgate. **W. Whitelaw**, Guelph.

REPRESENTATIVES TO FAIR BOARDS.

Canadian National Exhibition: **J. D. Brien**, Ridgetown.

Central Canada Exhibition: **George R. Thomas**, Ottawa.

Western Fair, London: **John Kelly**, Shakespeare; **James Snell**, Clinton.

Ottawa Winter Fair: **A. R. Dawson**, Ottawa; **W. P. Hurdman**, Ottawa; **W. A. Wallace**, Kars; **G. W. Graham**, Carp.

Ontario Provincial Fair: **George L. Telfer**, Paris; **James Douglas**, Caledonia; **John Kelly**, Shakespeare; **William Whitelaw**, Guelph.

Eastern Canada Live Stock Union: **George L. Telfer**, Paris.

Chatham Winter Fair: **Cecil Stobbs**, Leamington.

Royal Winter Fair: **Geo. L. Telfer**, Paris; **J. D. Brien**, Ridgetown; **Lt.-Col. Robt. McEwen**, London, R. R. No. 4.

FINANCIAL STATEMENT.

OF THE ONTARIO SHEEP BREEDERS' ASSOCIATION, FOR THE YEAR ENDING DECEMBER 31ST, 1919.

RECEIPTS.

Cash on hand as per last report	$2,330 09
Canadian Sheep Breeders' Association, grant	1,587 45
Dividend on stock	60 00
Interest on Victory Bonds	55 00
Interest on deposits	18 90
City Treasurer, Guelph	200 00

Caledon Sheep Club	$1,400 00	
Refund, sale of wool, 1918	275 63	
Balance, sale of wool, 1918	2,632 78	
Refund, freight charges, 1918	1 04	
Shearing, 1918	45 56	
Shearing, 1919	14 75	
Co-operative cars, refund loan	1,000 00	
Dominion Express, payment on exhibition wool	50 00	
Refund, wages, 1919	62 60	
Refund, advance expenses	10 00	
Refund, freight charges, 1919	9 52	
Sale of shepherd supplies	1,633 43	
Sale of wool, 1919	426,792 10	
Miscellaneous	10 45	
Total		$438,189 30

EXPENDITURES.

Directors' expenses	$1,204 80	
Grants—		
Ontario Provincial Winter Fair, grant, 1918, $200; 1919, $600	800 00	
Ottawa Winter Fair	150 00	
Western Fair, London	150 00	
Canadian National Exhibition	200 00	
Payment on Victory Bonds	1,700 00	
Payment on sheep, Caledon Club	1,453 50	
Auditor	25 00	
Exchange	9 02	
Expenses *re* annual meeting	64 20	
Membership fee, Eastern Canada Live Stock Union	25 00	
Loan to co-operative cars	500 00	
Textile World Journal	4 00	
Prizes awarded District Representative, Fleece Competition	95 00	
Prizes awarded Sheep Flock Competition	355 00	
Specials, Caledon Sheep Club	9 25	
Payment on sheep, Peel County	730 05	
Payment on exhibition wool	78 00	
Stationery	92 00	
Postage	437 10	
Advertising, calendar, $440.27; other advertising, $94.68	534 95	
Printing	209 50	
Wool adjustments, 1918	472 11	
Stock in Canadian Co-operative Wool Growers	1,000 00	
Printing forms, shepherd supplies	91 50	
Wm. Johnson, sheep skins	16 00	
Wool sacks	2,261 13	
Twine	1,176 58	
Supplies *re* wool sale	1,016 52	
Office supplies	270 60	
Shepherd's supplies	1,241 93	
Refund on shepherd supplies	179 20	
Freight charges on wool shipped to Guelph	5,055 18	
Express charges	97 81	
Labor *re* wool sale	2,916 80	
Fitting building	782 54	
Repairing wool sacks	88 04	
Office help and board	776 95	
Interest charged	10 90	
Telephone and telegrams	49 11	
Shippers, payment on wool	410,119 87	
Cash on hand	1,740 16	
Total		$438,189 30

GEO. L. TELFER,
President.

R. W. WADE,
Treasurer.

WOOL REPORT.

OF THE ONTARIO SHEEP BREEDERS' ASSOCIATION.

RECEIPTS.

To Canadian Co-operative Wool Growers, Limited, sale of wool—			
Value of wool	$439,464 87		
Value of sacks	1,618 00		
Total value	$441,082 87		
Deductions—			
Selling commission charged by Canadian Co-operative Wool Growers		$14,181 50	
Freight		19 43	
Interest charged on advance payments on wool		1,130 72	
Stock		318 00	
		$15,649 65	
Net receipts from sale of wool and sacks			$425,433 22
To John Hallam—			
Wool		$394 64	
Sacks		2 04	
Skins		16 00	
Exchange		47	
			413 15
To Wm. Johnson—			
Bags		$96 60	
Wool		23 40	
Skins		6 00	
			126 00
To O. J. Stull—			
Wool			341 64
To E. Leadlay & Co.—			
Wool and sacks			236 00
Live Stock Branch, Ottawa—			
Wool			236 00
Total proceeds from sale of wool, sacks and skins			$426,786 01

DISBURSEMENTS.

Cheques to wool shippers	$410,119 87
Memberships deducted	3,073 50
Freight charges deducted	5,023 04
O. S. B. A. charges	7,777 13
Money due from 1918, overpaid accounts deducted	180 10
Stock in Canadian Co-operative Wools Growers, deducted	318 00
Wm. Johnson, payment on sheep skins	16 00
Total disbursements	$426,507 64

GEO. L. TELFER, *President.*

R. W. WADE, *Treasurer.*

PRESIDENT'S ADDRESS.

GEORGE TELFER.

I desire to thank the members of this Association for the honor they have conferred upon me in placing me in the important position of President of this Association. I had something to do with the organization of this Association and the volume of business which we have been able to do during the past year has shown that the organization was very much needed. It is unnecessary for me to go into its objects. We got together simply to better our own conditions, and the report that has just been read fully justifies our claim that we have accomplished a great deal for the betterment of the Ontario Sheep Breeders.

If we can interest the boys and girls in the sheep business they will not depart from it when they get old. I am convinced that anyone who becomes interested in the sheep business in Ontario will find that they have a business that will bring them in good returns for the money they invest. The object in having supplies for sale was not for the purpose of making money for the organization, but to help the sheep breeders of this Province in every way we could, and I think we took as little as we could possibly do in order to run the business and pay expenses, and I am sure the returns will be satisfactory to you.

There are a number of ways in which we have helped the sheep breeders of the Province. We have given prizes for the best flocks of sheep, and we tried in every way to encourage better care of the flocks and better care of the wool and the care of the sheep, and the docking of the lambs, and the castrating of the lambs, and I believe we accomplished a great deal of good. We find in the stock yards a great many lambs undocked, and also a great many not castrated, and we know that this is a great loss to the trade, and it is also a great loss to Ontario sheep breeders.

I think the best feature of our work has been the co-operative selling of wool. We were the pioneers in this work of selling wool co-operatively. It has been so successful that we have from year to year gone on until we reached the large business that was done last year. I do not think there is anything that we could have done that would have been of greater benefit to sheep raising in the Province. No matter what the price may be, we know that we put the wool of the Province on the market in such a way as to receive the commendation of the buyers, and the manufacturers. We also know that we have been getting the very top prices for our wool, and that should be satisfactory to every breeder.

There has been a little misunderstanding as to certain grades of wool. We have many breeders of coarse wool sheep in this country, men who have been in the business for a long time, and during the past year the coarse wool has been selling for less than the finer grades. It is hardly necessary for me to say that you all know the reason: coarse wool was in great demand during the war, and we did not feel the fluctuation in price in the same way as we have since the war has concluded. The soldiers are returning and they no longer have use for the uniform and are glad to get into finer clothing, and this one thing alone has had a tendency to make the demand greater for the finer wool, and make the coarser grades harder to sell. I think if you will just consider that we are endeavoring to give you the market price, and the full market value for your wool no matter whether it be coarse wool or fine wool, you will realize that we are doing the very best we can for the wool growers of the Province. The market alone governs the price and we have no control over it, but we can see that you get the highest market price, and we have been doing that. You are doubtless aware that in some places the buyers have been paying a little more for coarse wool than we have been receiving, but that has been because a buyer would go into the country and buy a quantity of wool, and he would get the fine wool at less than its value and pay a little more than the market price for the coarse wool. In this way the buyer came out even at the end, but the grower of the fine wool suffered a loss. With our organization nothing of that kind is allowed, as the wool is sold for its market value.

The grower of long wool must realize that for every pound of wool the growers of fine wool get he will probably get a pound and a half or two pounds, and fleece for fleece they are little, if anything, behind the fine wool prices.

The future of our organization demands some attention, we have brought co-operation to a very high standing, and a large organization has been established for the buying and selling the wool of the Dominion of Canada, and so far it has been very successful. It may be that we may no longer have the Government at the back of us in giving assistance. I do not know that as a business organization we should ask for anything more than any other organization. We are now on our feet and we should stand on our own feet and I think we are prepared to do what it right along that line.

I believe we can do a great deal of educational work in this Province, not only in encouraging the farmers to keep more sheep, and better sheep, but to take more care of them. I believe if we can educate the people to a proper appreciation of the value of sheep raising that we would soon make sheep raising one of the greatest assets of the Province. I feel that a small flock of sheep on every farm would be a great asset not only to the individual farmer but to this country. In this country where we have cold weather and where we need meat products there is no animal that will fill the demands so well as the sheep. I think we should all be boosters for the sheep, and let us all strive in the future to advance the sheep business in our own locality, and in the province as a whole.

One word with regard to the pure-bred; I think we should turn our attention to the better breeding of pure-bred sheep. We have the markets of the United States close at hand, and it does seem to me that we should spare no effort to get better sheep of pure-bred strains. We hope the time is not very distant when the Province of Ontario will be looked to as one of the breeding grounds of good sheep on the North American continent. If we are able to do this we will accomplish a great thing for our country. There are several ways of doing that, and I will just touch on one of them: we might organize something new in the way of ram sales, we have never done anything like this in the past. I think it would be a good thing for the sheep breeder if he were able to buy his rams at his own price and be able to know that he was getting good stock, and I can see no reason why we could not hold sales of rams in this country.

I trust that whoever may be your next president, you will all get behind him and that he will have your hearty support and that you will boom the sheep industry to the limit. Mr. Wade made some remarks as to the membership fee. I do not think that should bother anybody, when we know that this is our organization. We have boosted the price of wool, but not to the consumer, but we have boosted it to the producer 20 cents or a little more per pound. When we have been able to do that what is a small membership fee of 50c. When we consider the great benefits that we have received we should forget the membership fee and any other little thing that has cropped up, and not let small things hinder an organization of this kind.

I thank you very much for your attention, and for your kindness to me during the past year, and I would also like to thank our directors and Mr. Wade, who has always worked in the best interest of this Association. (Applause.)

BOUNTY FOR WOLVES.

F. C. PATTERSON: I notice from the minutes that this matter of wolves destroying sheep was brought up at the last annual meeting, but no action was taken. I can give some of my own experience as to the destruction of sheep by wolves and the fact that the bounty that is paid at the present time is not sufficient. The result is that a great many people in the northern part of this Province are being forced out of the sheep business. Timber wolves are causing most damage around North Bay and Sudbury, and further west the brush wolf is doing damage. The Government is giving a bounty of $20 on timber wolves, and that does not encourage the trapper to go after wolves, because it is too much trouble to catch them. They can go out and get a beaver much easier and the skin is worth $45. Therefore, I would ask this meeting to approve of the following resolution:

"Whereas sheep raising in the rougher and northern parts of Ontario is greatly discouraged by the ravages of wolves, and whereas the present bounty of $5 for brush wolves and $20 for timber wolves, with the Government retaining the hides, does not encourage trappers to destroy them, other than for their fur value which equals or exceeds their bounty value during the winter; the Ontario Sheep Breeders' Association would strongly recommend that the Ontario Government increase the bounty on brush wolves from $5 to at least $20 and on timber wolves from $20 to at least $40, and that a copy of this resolution be forwarded to the Premier, the Minister of Agriculture and the Provincial Treasurer, who has charge of wolf bounties."

I have another resolution as follows:

"Whereas Algonquin and other park preserves are proving to be the breeding and harboring places for wolves in that the trapper and hunter is not permitted to trap or hunt in them, and raids on sheep by wolves are frequent in the areas surrounding or near these parks, the Ontario Sheep Breeders would recommend that all park rangers and officers be instructed to destroy wolves whenever possible and be permitted to retain the bounty for doing so; and that a copy of this resolution be forwarded to the Premier, the Minister of Agriculture, and the Minister of Lands, who has charge of the park reserves."

I do not want to go into details with regard to this matter, but I consider it of very great importance to the sheep men of the northern part of this Province which is especially adopted to sheep raising. We have an unlimited amount of grazing land, and we think that if we could get protection from wolves it would help to increase the flocks in the north country. I therefore move that these two resolutions be adopted.

COL. MCEWEN: I feel that no action would follow even if these resolutions were adopted, unless the matter is followed up. This is a matter that should be looked into, and it should be referred to the Executive Committee, and they can look into it carefully and then follow it up and see that some action is taken. I therefore move that it be referred to the Executive Committee.

MR. PATTERSON: That may bring better results than the passing of the resolutions. We were in conference with the Department of Game and Fisheries yesterday, and we find that action has been recommended for sometime, but the Provincial Treasurer is in charge of the matter of wolf bounties and no action has been taken.

The Chairman: We want to grow sheep and not wolves, and we ought to take every possible step to protect the sheep.

Mr. Harding: Mr. Patterson did not tell you that he lost twenty sheep by wolves this year.

Moved by Col. McEwen, and seconded by Mr. Harding, that the matter of wolf bounties be referred to the Executive to take action. Carried.

JUDGES RECOMMENDED BY ONTARIO SHEEP BREEDERS' ASSOCIATION

Canadian National Exhibition.

Cotswolds	J. D. Brien, Ridgetown. (Reserve) J. C. Ross, Jarvis.
Dorset Horns	W. H. Beattie, Wilton Grove. (Reserve) G. L. Telfer, Paris.
Hampshires	H. N. Gibson, Dundee, Ill.
Leicesters	Wm. Clarkson, Weston. (Reserve) John Kelly, Shakespeare. (2nd) Abram Easton, Appleby.
Oxford Downs	J. G. Hanmer, Ames, Iowa. (Reserve) D. Johnston, Ekfrid.
Shropshires	W. H. Beattie, Wilton Grove. (Reserve) Geo. McKerrow, Pewaukee, Wis.
Southdowns	F. Kleinhunz, Madison, Wis. (Reserve) H. N. Gibson, Dundee, Ill.

Central Canada Exhibition.

Cotswolds	B. Glaspell, Hamilton. (Reserve) J. M. Gardhouse, Weston.
Dorset Horns	W. A. Dryden, Brooklin.
Hampshires	L. E. Morgan, Milliken.
Leicesters	James Snell, Clinton.
Oxford Downs	J. E. Cousins, Harriston.
Shropshires	Lionel Orbell, Queenstown. (Larkin Farms, Lewiston.)
Southdowns	W. A. Dryden, Brooklin.

Chatham Winter Fair.

Cotswolds	J. M. Patterson, Kerwood. (Reserve) G. H. Mark, Little Britain.
Dorset Horns	Lionel Orbell, Queenstown.
Shropshires	Lionel Orbell, Queenstown.
Southdowns	Lionel Orbell, Queenstown.

Ontario Provincial Winter Fair.

Cotswolds	W. Glaspell, No. 2, Oshawa. (Reserve) James Underhill, Claremont.
Dorset Horns	Graham Walker, Chazy, N.Y. (Reserve) H. N. Gibson, Dundee, Ill.
Hampshires	H. N. Gibson, Dundee, Ill.
Leicesters	John Kelly, Shakespeare. (Reserve) C. Wood.
Oxford Downs	J. G. Hanmer, Ames, Iowa. (Reserve) G. L. Telfer, Paris.
Shropshires	H. N. Gibson, Dundee, Ill. (Reserve) A. McEwen, Brantford.
Southdowns	Graham Walker, Chazy, Ill. (Reserve) J. C. Duncan, Lewiston, N.Y.

OTTAWA WINTER FAIR.

Cotswolds	N. Park, No. 6. Tavistock. (Reserve) J. M. Gardhouse, Weston.
Dorset Horns	D. A. McEwen, Brantford.
Hampshires	W. A. Dryden, Brooklin.
Oxford Downs	J. E. Cousins, Harriston.
Shropshires	J. W. Springstead, Caistor Centre.
Southdowns	J. W. Springstead, Caistor Centre.

ROYAL AGRICULTURAL WINTER FAIR.

Cotswolds	S. Dolson, No. 2, Norval Station. (Reserve) J. C. Ross, Jarvis.
Dorset Horns	H. N. Gibson, Dundee, Ill. (Reserve) R. H. Harding, Thorndale.
Hampshires	H. N. Gibson, Dundee, Ill.
Leicesters	James Snell, Clinton. (Reserve) David Kelly.
Oxford Downs	W. A. Shafor, Hamilton, Ohio. (Reserve) R. H. Harding, Thorndale.
Shropshires	J. G. Hanmer, Ames, Iowa. (Reserve) C. W. Gurney, Paris.
Southdowns	H. N. Gibson, Dundee, Ill. (Reserve) J. C. Duncan, Lewiston, N.Y.

WESTERN FAIR, LONDON.

Cotswolds	James Underhill, Claremont. (Reserve) S. Dolson, No. 2, Norval Station.
Dorset Horns	G. L. Telfer, Paris.
Hampshires	J. Kelly, Shakespeare.
Leicesters	Abram Easton, Appleby. (Reserve) Clarence Wood, Freeman.
Oxford Downs	W. H. Beattie, Wilton Grove.
Shropshires	A. McEwen, Brantford. (Reserve) J. W. Coulter, St. Thomas.
Southdowns	J. C. Duncan, Lewiston, N.Y. (Reserve) G. L. Telfer, Paris.

INTERNATIONAL EXPOSITION, CHICAGO.

Leicesters	E. E. Wood, Freeman. (Reserve) W. Clarkson, Weston.

Ontario Horse Breeders Association

The Annual Meeting of this Association was held in the Hotel Carls-Rite, February 4th, 1920.

OFFICERS.

President	John A. Boag, Queensville, Ont.
Vice-President	John Gardhouse, Weston, Ont.
Secretary-Treasurer	J. E. Rettie, Toronto, Ont.
Executive Committee	T. H. Hassard, Markham; Wm. Graham, Claremont; W. G. Hill, Queensville; C. W. Gurney, Paris; W. L. Mossip, St. Mary's; W. Scott, Sutton West; Geo. Pepper, Toronto.

Directors.

Canadian Clydesdale Association.

Wm. Smith, Columbus.
Peter Christie, Manchester.
Jas. Torrance, Markham.
T. H. Hassard, Markham.
W. L. Mossip, St. Mary's.
Wm. Graham, Claremont.
John Moore, Queensville.
F. Richardson, Columbus.
John A. Boag, Queensville.
W. Scott, Sutton West.
J. Henderson, Thamesford.
Robt. Graham, Toronto.
J. Gould, Uxbridge.

Canadian Shire Association.

John Gardhouse, Weston.
Amos Agar, Nashville.

Canadian Percheron Association.

E. C. H. Tisdale, Beaverton.
W. G. Hill, Queensville.

Canadian Belgian Draught Association.

C. W. Gurney, Paris.

Canadian Hackney Association.

J. M. Gardhouse, Weston.
H. M. Robinson, Toronto.

Canadian Standard-Bred Association.

Dr. Jas. Moore, Brooklin.
Geo. Pepper, Toronto.

Canadian Thoroughbred Association.

E. B. Clancy, Guelph.
G. B. Elliott, Newtonbrook.

Canadian Pony Society.

John Miller, Jr., Ashburn.
Jas. Creech, Lambton.

Representatives to Fair Boards.

Canadian National Exhibition: Wm. Smith, M.P., Columbus.

Western Fair, London: Wm. Mossip, St. Mary's; George Charlton, Duncrief.

Central Canada Exhibition: Wm. Smith, M.P., Columbus; S. Harvey, Record Office, Ottawa.

Ottawa Winter Fair: Adam Scharf, Cummings Bridge; Walter Scott, Sutton West; Wm. Smith, M.P., Columbus; Fred Richardson, Columbus.

Ontario Provincial Winter Fair: John A. Boag, Queensville; Peter Christie, Manchester (heavy horses); T. H. Hassard, Markham; H. M. Robinson, Toronto (light Horses).

Royal Agricultural Winter Fair: John A. Boag, Queensville; William Graham, Claremont; Peter Christie, Manchester.

Eastern Canada Live Stock Union: Wm. Smith, M.P., Columbus.

Auditor: G. de W. Greene, Parliament Buildings, Toronto.

The Secretary gave a report of the Committee appointed to draw up a new Constitution, and presented the Constitution for the consideration of the meeting. The following changes were made to the printed report:

Clause 3; under Membership, the following words were struck out. "Who have recorded at least one pedigree as Breeder or Importer during the preceding calendar year," and the Canadian Belgian Draft Horse Breeders' Association be added.

Clause 11; "Seven" to be substituted for "Three Directors."

Clause 12; "Five Members" substituted for "Three Members."

The recommendation of the Directors, "That Mr. George Pepper. Toronto, be made a Life Member of this Association," was adopted by the Annual Meeting.

The Secretary gave a report of the Premium Stallions enrolled under the Ontario Stallion Enrolment Act.

Moved by WALTER SCOTT, seconded by FRED RICHARDSON, "That this meeting approve of the report, *re* Premiums to Stallions as presented by the Secretary." Carried.

The following resolution on the motion of Messrs. Peter Christie and John A. Boag, was carried:

"Whereas, the Live Stock industry in Ontario occupies an important place as the basis of successful agriculture and should be protected in the best manner possible from losses resulting from the various ailments and diseases common to animals, and, whereas, the treatment of disease of animals is largely undertaken by veterinary surgeons, we consider it essential that a standard of qualification should be required of those undertaking veterinary practice, at least equal to that required in other Provinces of Canada and the various States of America. We further believe that by requiring those undertaking veterinary practice to become registered or licensed the same as in the other Provinces of Canada that it would prove a safeguard against unqualified persons.

Therefore, be it resolved that the Ontario Horse Breeders' Association hereby approve of any legislation having for its object the improvement of veterinary services in Ontario."

FINANCIAL STATEMENT.

OF THE ONTARIO HORSE BREEDERS' ASSOCIATION, FOR THE YEAR ENDING DECEMBER 31ST, 1919.

RECEIPTS.

Cash on hand as per last report	$173 46	
Government grant, 1918	500 00	
Government grant, 1919	500 00	
Total		$1,173 46

EXPENDITURES.

Preparation of horse lists	$30 00	
Auditor	3 00	
Special prizes awarded Ontario Provincial Winter Fair	390 00	
W. R. Phillips, printing notices	5 25	
Directors' expenses	95 00	
Hotel Carls-Rite, rental of room	10 00	
Membership fee, Eastern Canada Live Stock Union	25 00	
J. W. Wheaton, Bright Memorial	25 00	
Cash on hand	590 21	
Total		$1,173 46

WM. SMITH,
President.

R. W. WADE,
Treasurer.

ADDRESS.

WM. SMITH, M.P., COLUMBUS.

It appears to me that this is one of the most interesting meetings, numbers considered, that we have ever had, and it goes to show that you are all taking an interest in the work in which we are engaged. The year 1919 was one of the most eventful this country has ever known. A year ago we were congratulating ourselves that the war was over, and that our boys were coming back covered with a great deal of glory. Unfortunately, during the past few months we have had more turmoil in the country than ever before. Capital and labor seems to be combined against each other, and that is rather an unfortunate thing. Labor has its rights, and it must not be forgotten that capital also has its rights. Capital must use a great deal of common sense in the days to come, and labor must follow on the same lines and if they do this, unrest will gradually pass away.

I would not like to say that the horse trade has been too brisk during the past twelve months. There may be a number of reasons for that. I think you will all agree with me when I say that the future of the heavy horse is assured, and that he cannot be done without, and those who have invested their money in heavy horses have little to fear.

I propose to read a few extracts from a letter which I received from Captain Gillies of the Donaldson Line. I asked him a number of questions, and he says: "Your letter of the 21st received. About space for horses, we have offers of 100 horses at $110 per head from Portland to St. John on *Cabotia*, but as vessel is loaded deep we decided not to take any during winter. *Cabotia* leaves Glasgow to-morrow, 28th, with 100 head of cattle, 16 horses and 50 sheep for St. John." They do not propose to take much action this winter in the shipping of Canadian horses. I have in my hand an article on "The Mechanical Challenge to the Horse." I would like to read the whole article to you, but will just quote a paragraph as follows: "During the war, in accordance with precedent, horses of all kinds advanced greatly in value. Clydesdales shared in this advance and seldom was it possible to purchase an entire horse of the first rank according to show-yard standards for less than £1,000, or as we put it in Scotland, for less than the four figures. Putting aside because of the special circumstances attending his sale the £9,500 paid for the Baron of Buchlyvie 11263, we have the £5,250 paid at public auction for his son Bonn Buchlyvie, 14032, and the average of £1,676 realized for thirteen Clydesdales in January, 1919, by William Dunlop." Of course these are extravagant figures, as we would consider them in Canada. Then it further says in this article: "A team of four Clydesdale geldings was sold in the autumn to Allsopp's Brewery for an average of £280. Then it further goes on to show how the Army horses were sold by the Remount Department. "The number of such horses sold of all classes was 91,891." "Horses for heavy transport work were eagerly bought up and the mortality among such was sometimes very heavy." And then in conclusion this article says, "To sum up. Neither on economical nor on grounds connected with more efficient transport, is there any evidence at present that the breeding of heavy Clydesdale horses for street or agricultural work is likely to be superseded by motor traction." Then I have an item from a Scottish paper in which it says "Mr. William Robertson, of Messrs. Andrew Oliver and Son, auctioneers, sold in the Glasgow market on

Wednesday 18 mares and geldings landed from Canada on Monday. The quality of the horses were distinctly above the average."

I hope that as vessels get relieved from other work we will be able to secure space for our horses at lower rates because it will be impossible to pay these heavy charges.

Another matter that I wish to bring before you is that the railways and express companies are looking for higher rates, and one of the great difficulties in dealing with them is that we have not got any money. The western live stock people propose taking the matter up through Mr. Hoadley and Mr. Hutton. I am afraid the rates will be increased, and the farmer and the live stock men will have to pay the increase.

The Live Stock Council was formed on the advice of the western men, in fact, their terms were almost dictated to us. We told them that as far as finances were concerned, they must not look further to the Record Board. There is no use in our asking the Railway Commission not to raise the rates just to oblige some of us; we have got to put up an argument sufficiently strong to convince them that we are right. You will remember that an attempt was made to have the live stock associations finance the Council, but the result has been that the work so far has been a failure. There can be no question that this Council should accomplish a great deal of good, but they cannot do it upon wind.

Since this organization was started I have had the honor of being your chairman, and the time has come when I should give way for those who have been my colleagues during these years. I propose to sit to one side and allow a younger man to take my place. No one could have been more kindly treated than I have been, and I want you to accept my sincere thanks for the kindness you have always shown me. I recognize that in stepping to one side, it is the parting of the ways, we cannot help getting old, but I think we have a right to forget our activities and allow younger men to do the work, and to have a hand in the game.

The Ontario Cattle Breeders' Association

The Annual Meeting of this Association was held in the Hotel Carls-Rite, Toronto, February 5th, 1920.

OFFICERS.

President .... John Gardhouse, Weston.
Vice-President .... W. H. Cherry, Hagersville.
Secretary-Treasurer .... R. W. Wade, Parliament Bldgs., Toronto.

Directors.

Aberdeen Angus.

G. C. Channon, Oakwood.
Jas. Bowman, Guelph.

Ayrshire.

Alex. Hume, Campbellcroft.
John McKee, Norwich.

Hereford.

L. O. Clifford, Oshawa.
H. D. Smith, Ancaster.

Holstein-Friesian.

W. H. Cherry, Hagersville.
B. R. Leavens, Bloomfield.
J. W. Richardson, Caledonia.
C. N. Hilliker, Burgessville.
David Arbogast, Sebringville.
Fred W. Lee, Springford.
W. E. Thompson, Woodstock.
J. E. Brethour, Burford.
R. S. Stevenson, Ancaster.

Jersey.

D. O. Bull, Brampton.
H. A. Dolson, Cheltenham.

Shorthorn.

R. R. Wheaton, Thorndale.
F. W. Scott, Highgate.
Jas. Douglas, Caledonia.
W. A. Wallace, Kars.
W. A. Dryden, Brooklin.
Wm. Waldie, Stratford.
A. G. Farrow, Oakville.
John Gardhouse, Weston.
Geo. Gier, Waldemar.

Central Committee.

Better Bull Campaign.

James Bowman.
Alex. Hume.
R. S. Stevenson.
D. O. Bull.
H. D. Smith.
John Gardhouse.
John McKee.
W. H. Cherry.
W. R. Reek.
R. W. Wade.

Representatives to Fair Boards.

Canadian National Exhibition: John Gardhouse, Weston.
Western Fair, London: Frank Silcox, Iona.
Central Canada Exhibition: T. L. Fairbairn, Billings Bridge, Ont.
Ottawa Winter Fair: W. J. Bell, E. S. Archibald, J. H. Grisdale, T. Hitchman.
Ontario Provincial Winter Fair: R. S. Stevenson, John McKee, W. A. Dryden, John Gardhouse.
Eastern Canada Live Stock Union: John Gardhouse.
Royal Agricultural Winter Fair: B. A. Bull, John McKee, The President.

FINANCIAL STATEMENT.

Of the Ontario Cattle Breeders' Association, for the Year Ending December 31st, 1919.

Receipts.

Cash on hand as per last report	$1 86	
Ontario Government grant, 1918	500 00	
Ontario Government grant, 1919	500 00	
Total		$1,001 86

Expenditures.

Carls-Rite Hotel, room for meeting	$10 00	
W. R. Phillips, printing notices	4 50	
Auditor	2 00	
Directors' expenses	169 60	
Membership fee, Eastern Canada Live Stock Union	25 00	
N. R. Butcher, reporting annual meeting	21 60	
Cash on hand	769 16	
Total		$1,001 86

John Gardhouse,
President.

R. W. Wade,
Treasurer.

ADDRESSES.

John Gardhouse, Weston.

I am sure it is a pleasure for me to be able to say to you at this time that the cattle business is in a flourishing condition. Any of you who were out at the sale yesterday would have noticed that good foundation stock sold at prices as high or higher than they have ever sold for before, or for many years. That is certainly good news to all breeders of good cattle, no matter what breed they may be. There never was a time in the history of the country when feed was as high as it is at the present time. There is a campaign on at the present time, inaugurated by the Provincial Government and the Federal Department of Agriculture and the Cattle Breeders Associations to eliminate the scrub bull. Those of you who attend the Canadian National Exhibition and other large exhibitions would have noticed that we had the scrub bull buried at these large exhibitions, but there are a great many still at large, and it will be necessary to cut them down as quickly as possible.

The executive of the Cattle Breeders' Association have had several meetings during the year, and have worked out different plans and suggestions, and have met the late Minister of Agriculture as well as the present Minister, and they both fell right in line with the suggestions we have made, and as the Secretary has already stated there has been placed in the estimates for this year $1,500 for the Cattle Breeders' Association in order that they may be in a position to further carry on this work. At the last meeting we had with the Hon. Mr. Doherty, our secretary outlined what might be worked out in order to further the campaign, and is was very largely adopted by some of the other meetings. Later on we will have the whole programme explained as arranged between the

Federal and Provincial Departments and the Cattle Breeders' Associations. A field man has been appointed and he is out on the work. He is being paid by the Federal Department of Agriculture. The office of Mr. Wade, the Director of the Live Stock Branch, will act as a clearing house, and all the office work and perhaps a good deal of the other work will be done there. The Committee arranged that the Hon. Mr. Doherty was to speak at the Winter Fair, Guelph, on Monday and there was a meeting held of the Federal Representatives and the Provincial Officials and the Cattle Breeders' Association to take up the whole question. After a good deal of discussion along different lines a committee was appointed, consisting of one member from the Dominion Government, Mr. Reek; and one from the Provincial Government, Mr. Bailey; and Mr. Wade, Director of Live Stock; and myself as President of the Cattle Breeders' Association. We had two or three meetings, and Mr. Bailey drew up an agreement, and it was taken up clause by clause and agreed to, and now we feel that we are in shape to go right ahead with the work, and put on a strong healthy campaign in order to try and get rid of the scrub bull, which animal is altogether too plentiful in the Province of Ontario, especially at this time when feed is so dear. We have a lot of cattle in the country that are eating more than they are worth, they are eating a lot of good feed that might be used in some better way. I remember a short time ago meeting with a very prominent farmer, and he said that he was at one of the mills trying to get some feed, and another farmer drove in with several bags of very nice wheat, and he had it ground up to take home and feed to his cattle and hogs. It does not look right that real good samples of wheat should be taken to the mill to be ground up for feed for cattle that are not worth feeding. We want to show the farmers that it is a mistake to be growing good wheat and feeding it to a miserable lot of scrub cattle. When we speak of the scrub bull we are not particularly speaking of the grade bull, and paying no attention to the scrub bull that may have a pedigree. I would just as soon have a real well bred bull that did not have a pedigree, with some strong healthy breeding behind it: than I would have a miserable fellow that was not healthy, and that was not a fair type of the breed that he was supposed to represent, even if he did have a pedigree. We want to educate our breeders along that line. Some breeders have gone so far as to suggest that we should ask for legislation similar to that secured by the horse breeders, and which is working to the advantage to the horse breeders and to the province as a whole. The committee felt that we should first have an educational campaign in as many counties as have the organization for the work.

I am told that the committee are going to assist a few counties first, and try and put on a fairly good campaign there and accomplish something which will be worth while, rather than spread their efforts over too many counties at first, and they selected the counties of Lambton, Wentworth, Halton, Dufferin, Prince Edward, and Carleton; spreading them all over the Province from Lambton to Prince Edward and Carleton. That, however, does not prevent any other country taking up the campaign in any way they wish. This will be worked out very largely with the assistance of the Live Stock Branch, and the Institute Branch who will always be ready to provide speakers for any county or district that may want them, and they will work with the assistance of the District Representatives in the county. If there is some good live organization in the county and an active Agricultural Representative there, we will be able to accomplish a good deal of work.

W. R. REEK, ASSISTANT LIVE STOCK COMMISSIONER, OTTAWA.

Allow me to go back a few months when you will remember that the Ontario Department made a survey of the bulls being used in the Province of Ontario. As a result of that survey they discovered that about 47 per cent. of the bulls were not thoroughbred, or would come under the head of scrub or grades. The chances are that in that survey they got track of practically all the thoroughbreds, but it is quite reasonable to expect that they did not get all of the grades or scrubs reported, and therefore there are probably more than 47 per cent. being used in the Province. It is well known that as you go east in Ontario the percentage of grades increases very much. We look upon the Province of Ontario as being the breeding ground of Canada, and it is rather surprising to find this situation; so much so that not only the Minister of Ontario but the Minister at Ottawa became very much interesed and very soon came to an agreement that the two Departments should co-operate in doing something which would make Ontario a great example to the rest of Canada as well as to the various districts of the Province. As the Chairman has told you, a preliminary meeting was held at Guelph, with the result that a small committee was appointed to consider the situation, and at a later date that committee met in Toronto and a temporary agreement was arrived at whereby the expense of this campaign was to be met by the Departments of the Dominion and of the Province on a fifty-fifty basis. We found it rather difficult, in view of the way money is voted in Departments, for the Dominion to hand over the 50 per cent. of the expenses so the Ottawa Department has agreed to pay certain expenses and the Ontario Government will pay certain other expenses—the two Departments co-operate—but the details are immaterial to the campaign plan. You are interested in it only in so far as we may get results. Mr. McKenzie has been engaged as field man. He happens to be on our staff, but he is working under the direction of the Ontario Cattle Breeders' Association, who are to be the hub of this campaign. The idea is that the Breeders of Ontario will support their own Association, and I am confident that if they do not we will not get very far in this campaign. We must look for enthusiastic support everywhere for this campaign when it is put on, not only in the educational work but also in the supply of bulls. I may be mistaken but I am under the impression that it is not altogether lack of knowledge which is responsible for present conditions. I cannot make myself believe that the farmers of Ontario do not know that it will pay them to use a pure-bred animal rather than a grade or scrub. I cannot believe that there is a large percentage in Ontario who will admit that. They know, but they are simply indifferent in the matter. I quite admit that there are some situations in regard to the dairy interests in Ontario which are somewhat different, where a man is breeding all his calves, but when you trace it back you will find that that man has not an argument and I believe the biggest factor in this campaign is just to get that man to sit down and think of his place in the community, not only financially but as to his influence on his neighbors. To my mind that is a psychological question to a very large degree, and if that be true the campaign is not going to be one of holding many meetings but rather it will be an effort to meet and buttonhole the man on his own farm, and we must employ men who are able to go to these men on their farms and convince them that it is in their own best interests and in the interests of the community that they should do away with that grade animal and buy a pure breed. To do that we must work in small communities. You could spread your efforts all over the province, yet in a year from now you would hardly know that there had been a campaign. For example, a campaign started in Wisconsin over 15 months ago, and it has now spread pretty well all over the United States and everybody is interested in it, because they made an example of one county, cleaning up that one county, and making such an impression on the American stockman that everyone is thinking of the elimination of the scrub bull. We have to do that in Ontario. The Chairman pointed out that several districts had been selected in which to concentrate. I would like to correct one statement: He named Halton County. That was not one of the original counties selected; but immediately the farmers in Halton discovered that there was a campaign on they came and requested that they be included. That is the first definite result we have had already. These men said: "We want to be in on this; if this is good for Lambton it is good for Halton." They are well organized through the Farmers' Clubs to carry on the campaign. I would like to impress one thing, and that is that the men who are assisting the farmers in producing these bulls in place of scrubs have to be the very best men you can appoint or recommend—men who will do their utmost and be absolutely honest in order that the men who get pure-bred stock in place of scrub stock will be satisfied and feel that he has got value in exchange. I think that in Ottawa we will be able to work out an exchange by which the man who releases the scrub will get a first-class bull.

Prof. Wade Toole, Ontario Agricultural College Guelph.

I was pleased with what Mr. Reek said in regard to the matter of getting rid of the scrub. I have attended one or two meetings, and I am convinced that you can do very little at meetings because the men who go are those who are already interested enough to keep a pure-bred bull, and the fellow who has a scrub is the man who at this stage of the campaign you could not get to meetings very easily and you cannot get at him and if he does go to a meeting he does not believe you. You must tackle that man where the Secretary says, right on his own farm. I think the scheme of putting out a field man is a very good one indeed. I have prepared a good deal of material which shows up the scrub bull to a very great disadvantage, but there is no use going over that material before the men in this audience because they all know it. I happened to be out at the stock yards yesterday with a bunch of our College students. We brought about ninety of them down there to see how things were operated at the stockyards, and I must confess I was disgusted with the class of cattle that were there—absolutely ashamed—and the buyers told me that not one load in thirty at the present time are good cattle. You know what our Dominion Live Stock Commissioner found out on investigating the markets? He states that at least, so far as beef cattle are concerned, 43 per cent. grade common, and you know what common cattle are, as far as beef cattle are concerned. From the census taken in the Province by the Agricultural Representatives, the dairy cattle reported 58 per cent. grades or scrub bulls. You would expect them to run much higher in dairy cattle than in beef cattle owing to the fact that a large number of the men are interested in the milk trade, and, of course, have more interest in getting their cows with calf than anything else, and they are not very particular about the bulls, but I think we can put up arguments to show that even such men would be better by using good bulls. I notice Mr. Reek's statement that he did not believe that the farmers in Ontario that were keeping grade or scrub bulls thought them the better proposition.

I happened to be in Dufferin County addressing a meeting last Saturday—and a very good meeting it was—for we had the hall full, although it was a cold day. That is one of the counties that is to be concentrated upon in this campaign. There was a bright intelligent fellow in that meeting who actually had to be shown that it would pay him better to keep a pure-bred bull in a great herd than the grade bull which he had. He came and asked personally for information. There are a lot of such men who are not convinced that it is better business to keep a pure-bred bull than a fairly good grade one, such as this man said he had. We were able to interest that man to such an extent that he promised to go out with the men who would be appointed by the Ontario Cattle Breeders and purchase a pure-bred bull this spring in place of the calf which he had. There are plenty of these men who must be shown. The most of them do not come out to meetings, and you must get right on their land. I think the Department will have to depend a great deal upon our breeders of good cattle to help out in this campaign, and to assist in interesting their neighbors in better stock. It is a fact. that without the co-operation of the men who are already breeding good cattle, the Department cannot do very much, while a great deal can be done among neighbors by holding some of the good bulls that are taken away to the slaughter too young by exchanging these from neighbor to neighbor. You all know good bulls which have gone to the market at three or four years of age which would have been good for service up till six or seven years of age or possibly longer. We should retain these bulls and get rid of the scrub. This is where the breeders can help—by slaughtering nothing, but breeding pure-bred bulls to sell to the men who want to replace their grade with pure-breds. I think it is important that the Ontario grade bulls should be got rid of as well as the Ontario scrub. The Department is getting out a lot of leaflets which will give you the situation in regard to dairy cattle and beef cattle. This literature has been prepared to help the speakers who may go out. I think it is good business to have a sort of a rally in certain counties in which you are working, in order to get men interested and to go out and do good work, and this is to be followed by a house to house canvass. I think this concentration in a small area, possibly a township in some counties, would be an incentive to every county to clean up, because, after all, some counties are big areas to clean up, and if you got a part of the territory cleaned up you would have a basis to go on, and soon have the other fellows in line. As far as my end of the work is concerned, it will be to go out at your request to do whatever good I can in talking at meetings. I hope you will not give me too many meetings, because it is rather difficult to get out to them, and I think the other method is better—getting the man on his own land. I can only say that I will be pleased to do what I am able to do at any time and to go anywhere that you desire to have me go.

F. R. Mallory, Frankford.

We are very much interested in the scrub bull campaign in our district, possibly not so much in our county as in our township, because our county is 120 miles long and we have rather a heterogeneous class of farmers in the county, and it would be a pretty hard job to cover the whole area. It strikes me that there is a little error in conception about the dairy situation from what has been said by the last speakers. When they say that the man in the dairy business is perhaps not so much interested in the scrub bull, I would like to say that I come from a co-operative cheese factory district where you would think that the greatest incentive would be to make real cattle; but our little station there ships more cattle from that station than any railroad point within 100 miles, and there is not a good beef animal in the bunch. We have a lot of rough land, and the farmers allow their animals to run, and they are a lot of scrub stuff which the market has been giving too much money for and which they could profitably raise—you understand what I mean—the market has been so good that they could afford to let this young stuff run out in the bush and on rough land and throw it on the market at a year or a year and a half or two years old, and it did not cost them much and the profit was pretty good. So you will find our district is raising an awful lot of scrub stuff from inferior bulls and it is an entirely dairy section, and I believe that it is probably worse than the beef sections in that respect. There are quite a number of calves being raised there rather than going into veal. I drop that in passing because the railroad told me that within 150 miles of the road running north and south they have more stuff than any other station on the road. It seems to me that this bull campaign cannot be successfully carried on in public meetings, because as Prof. Toole has said, we only get the good fellows there. It seems to me that there must be a spirit instilled into the public of "everybody doing it." I believe that if we put the ladies to work they might do something. Sometimes an enterprising lady of the house can shame her man into going ahead a little along this line—if you put the ladies to work. (Hear, hear and laughter). I think possibly it would not be a bad idea to encourage the female population, as they are assuming greater proportions than ever. (Laughter). I have in mind half a dozen farmers who will not build a chicken coop or roost unless their better-half says so. That is the reason I make that remark. There are lots of cases of that kind in the Province, and Mr. Putnam, through his Women's Institute or in some other way might be able to do something along this line. I am much interested and will do anything I can for you at any time.

D. O. Bull, Brampton.

I do not know that I can say anything further along this line, except that I heartily approve of the attitude that is being taken, that concentration is the one thing, and that if we clean up only one township or one county it will make a starting point and give us a working basis. And we can go on from that to clean up other places. I think breeders could give assistance in one direction and that is that when the Agricultural Representatives or other people go out to the breeders to select the animals to replace a scrub bull, we should all give them the greatest possible assistance and let them have the animals below what we would sell them for in other districts. (Hear, hear). I understand that in Halton County some prizes are being arranged for, and some breeders have offered animals free of charge to be given as prizes or worked out in some way in order to encourage the raising of pure-bred bulls in these districts. In British Columbia I think that they are in advance of us in this line. The cattle Breeders' Association there have asked the Government to pass legislation prohibiting the use of scrub bulls in that Province. Another matter which I think that our Association might take up in the near future is the question of tuberculosis. The British Columbia Government has already taken the lead there, and herds in an entire district have been tested, and for the last couple of years they have not had a single reaction. In the United States the Government has instituted a system of accredited herds, and in the State of Virginia I think almost all the pure-bred herds are now on the accredited list. The Dominion Government has already taken steps in this direction, and I think we should join with them and assist them in getting as many accredited herds as we possibly can.

A. G. FARROW, OAKVILLE.

I came here to learn something. We are in this campaign. When we discovered that the Government intended going into this thing, we made a request from Halton through our Farmers' Organization that that county be given some consideration, if possible, to participate in the campaign, and when we learned that there was a possibility of that being done, we arranged the means of assisting in working it out. Through our county organization we appointed a committee of three men in each township to co-operate in the work, and thinking that it might be wise to concentrate upon a township we had a meeting last week at my own place. We had the Agricultural Representative and Mr. McKenzie, and this committee of three, and invited five or six of the prominent Shorthorn breeders of the township and the only two prominent Holstein breeders that we had. We did not have the other breeds represented at this meeting, but these men are anxious and willing to co-operate towards the elimination of the scrub bull. We discussed possible plans on which the Government intended to work in this connection, but we are willing and anxious to co-operate, and what we want now is the information which will enable us to go ahead.

In connection with the giving of prizes in Halton County, the plan is not just as Mr. Bull understands it. We are doing that in connection with judging contests not in connection with the scrub bull campaign, although the same men are working on it. We had it last year. The District Representative had been holding short courses, and they were very fairly attended. We have a new agricultural representative this year, and we tried the plan again in Acton, and though we did everything possible to get a class of boys to attend and offered every attraction so far as the system they had would permit, the largest class the representative got was four boys, which was too small a number to enable the class to be carried on. Realizing that, we thought that possibly we could stir up a little more interest among the boys, and we arranged for a week's course in each of our four townships, the boys to be given all the work they could take, so far as the week would permit, to train them to judge; they had all the instructions they could get on heavy horses, beef and dairy cattle, sheep and swine, and we got prizes for them in the shape of pure-bred livestock. We had a pure-bred Shorthorn bull, an Ayrshire bull, a Holstein bull, a Yorkshire sow, pure-bred, and two pure-bred Leicester ewes, and a pure-bred Shropshire ewe. Last year we were successful in getting three of those animals given to us as prizes, and we gathered up the rest of the money to buy them. We thought we had overstepped the mark last year and would not keep it up this year, but during this last week we have already had given to us a Shorthorn bull, and an Ayrshire bull and a Holstein bull—and they are all good ones—also a pure-bred Berkshire sow and a pure-bred Leicester ewe, and we will have no difficulty in getting the two other prizes. Then we have got our township councils to give us $50 in cash, and we expect other cash prizes in connection with the local district. Those stock prizes are given at the final contest after our course, and we have a Seed Fair in connection with the final contest and this money is used to carry prizes. Mr. Bull has started this thing, and as we have no Jersey breeders in the county, we would be very glad to get a Jersey bull. (Laughter).

Mr. Bull: I might inform Mr. Farrow that I spoke to Mr. McKenzie only two or three days ago, and the bull has already been given. (Applause).

DISCUSSION.

J. Bowman, Guelph: It is very interesting to listen to this discussion, and I am very pleased to see the demands made to clear away the scrub bull. I like this idea of competition. I have been attending shows for a long time, and I do not think anything appeals to me more than getting up a competition. It is a splendid education for boys to get into competition young, and after they have fought out for a while they will learn to take their medicine better than the average man at the township fairs, for time and time again I have seen more sourness worked out and more sore-heads than you would see in a larger fair. I think it developes boys and teaches them, when they go in and compete. In reference to the suggestion to-day that we should concentrate, it struck me whether it would not be a better plan to have competitions among district representatives in regard to cleaning up their counties, and have a field man as sort of general agent helping each one where he was in a difficulty, and exciting competition in that way. I like the idea of cleaning up the county; at the same time I think it would be a splendid idea to get up a competition among the district representatives to clean up the townships in each county. Could we do anything on that line? I throw it out as a suggestion. I think it might work up a good spirit of rivalry and keep everybody busy. There is nothing like competition to keep men busy, and if there is anything which the Angus breeders can do to help this matter along I think you will find them in line. I am very pleased to see how things are going.

Mr. Douglas: I have been very pleased to hear this discussion. I came in to get information rather than to give anything out. One thing in particular I would like to emphasise would be that I would hate to see some strong grade bulls put out and leave the pure-bred scrub that I understand is doing as much harm as any grade bull in the country in a great many cases. Some of them are really of very poor quality, and in many cases the breeders of those bulls are not trying to improve on the present stock that they have. In some cases they are using almost as poor judgment as many of the farmers in connection with the selection of their sires.

Mr. Flatt: I believe the ground has been pretty well covered. I do not know that the term "scrub bull" appeals to me; it does in a way as a pure breeder, but I wonder how it is going to sit on the system of the fellow that has the scrub bull. Is there anything a little milder which we might use, or do you wish to impress the fellow that way? I sometimes think if we could use a little milder term we might talk to that fellow in a little better spirit. If I had a scrub bull I think I would feel insulted when that term was used.

A Delegate: Smooth him down the back.

Mr. Flatt: Well if I wanted to smooth him down the back I would not call his bull a scrub; I would get at him some other way. At this meeting we only have enthusiasts, but we will have to be missionaries and go back to our districts and interest other men. We cannot expect to get any great money consideration out of it, but we will be doing good to our county, and I believe we will have to be missionaries. I know where there are low grade bulls, and I believe it will be my mission to go back to that man and quietly talk it over with him. The breeders can do so much more with these men than than can Government officials. That is the way it appears to me. We know the Government officials are all good, but some of these fellows will say " well they are paid so much for doing the work and they have to tell us something," whereas the real breeder can talk to these fellows in a better spirit than can the Government man. Another aspect that I would like to see developed is the training of younger boys—the young fellows in their 'teens at school. A lot of educational work is already being done, but I believe if we can get the boys dissatisfied with the poor bulls at home they would tell their dads about it, and keep at him until he would get a good bull: and this in turn would help to keep the boys on the farm. Anything I can do in any way I am only too willing to do.

H. D. Smith, Ancaster: One point has not been touched, and that is looking to the idea of community breeding so that where a district is running along on a certain line of cattle the tendency ought to be to keep them along that line rather than switch them off, crossing in and out with a breed. I think more attention should be paid to improving what the district already has. If it is a dairy district, go to it and improve the quality of the dairying; do not try to fix any beef crossings or *vice versa*. In various districts where particular breeds have got well established I think it would be well to keep them along the same lines rather than switch them. The one thing to be avoided in this campaign is competition between breeds. Where a district is a beef district, go to it in the beef line. If a man is doing well with the Shorthorn cattle, keep him to it. If he is doing well with black cattle, keep him to it. In a great many cases you will just get back to the scrub crop; sometimes it works that way. We cannot always tell how nature works out, but in going around this have been my experience. In the Province of Quebec twenty-five years ago you could go into the districts there and get all the beef cattle you wanted, but to-day you cannot get them at all, and that's just the result of switching in and out. A few firms will run the dairy line and others will run the beef line, and they will switch in and out and in a few years you will find them doing the opposite to what they were. Let those who have charge of the campaign try and keep the communities going as the present condition points out that they should be continued.

Mr. Flatt: That is a splendid idea. Take the Old Country, and you can tell right from the train that they are doing that. It gives the buyers help, and I think it is a splendid idea.

Mr. Stevenson, Ancaster: I am a disinterested man, not interested in any particular kind of cattle at present, and nobody can accuse me of trying to sell bulls because I am breeding them. There are many men on the back lines that we will have to get at, and we do not want them to get the impression that this is a scheme of the breeders to get rid of their pure-bred bulls. We must make them see that it is for their own good, for the only place where we can hit a great many farmers is in the pocket. I have been associated with farmers in every aspect, and I know pretty well how you have to handle them; so the men who go around to-day on missionary work have to go right back to the back lines of the township. Somebody pointed out that the good men who come to these meetings do not require this work, but you must get at the man on the back of the township. In my own county which is one of those chosen to try out the scheme, we have a pretty strong Agricultural Section of the Board of Trade in the City of Hamilton, and it has taken up the scrub bull campaign and intends to push it for all it is worth. Two or three meetings have been held already, and another is to be held on Saturday in the nature of a luncheon, and we will hold six or eight meetings in the county—perhaps two in some townships—and we are going to deal with this matter on the line of this campaign. It is up to the breeders to do their share, and they must be prepared to make some sacrifice, and as Mr. Douglas said, they must not try and sell all those bulls that they breed. Every breeder knows a lot of inferior bulls which must not be sent out; that is one of the great evils, and it is up to the breeders themselves to cut it out and be prepared to make a little sacrifice. It might be wise for the Breeders' Associations, Shorthorns and Ayrshires to recompense a man to some extent for inferior bulls and not let them go out. I am satisfied that a scrub bull is worse than a grade bull, for with a good grade bull you have a chance that he will go back to some good ancestor, but this scrub, his blood being strong, is almost certain to perpetuate some of his bad qualities through his offspring.

Mr. Hamer: I certainly agree with what Mr. Flatt has said, that in this campaign the breeders themselves are going to be able to do a great deal more in making the campaign effective than the Government officials can possibly do. Their enthusiasm, properly tempered in the spirit that Mr. Stevenson so strongly urged, will assure success to the campaign. From the first I have been personally very much impressed with the advantage to this campaign in Ontario of having the Ontario Cattle Breeders so strongly mixed up with it. So far as our Department is concerned, I am sure we are prepared to do anything we can to contribute to its success.

The President: All who have spoken appear to be in hearty accord with the campaign that is now under way, and that was so ably presented by Mr. Reek from the Department at Ottawa. I trust that we of the Ontario Cattle Breeders' Association may be able to efficiently handle this scheme with the help of the Federal and Provincial Departments who are good enough to put up the money. Both these Government Departments have stated that they are not particular about spending a few dollars in order to put on a campaign that will get results. That is what the Cattle Breeders' Association wants—to get results and get them abundantly—because to a large extent, as has been said, Ontario is the breeding ground for the Dominion of Canada. I have always felt, as I stated at a Cattle Breeders' meeting years ago, that we in Ontario should produce very largely the foundation stock for the new Provinces to the west of us. I know something of the West, and I am inclined to believe that they are ready to come to the Province of Ontario and get their foundation stock, providing we give them as good stock as they can get anywhere else for the same money; but if they have to go to other places where they can get better or cheaper stock, we cannot blame them for doing so. It is up to the breeders of live stock to produce that kind of animal in this country. Only one stall in your stable is required for one of the best animals we have got, and one that will bring the big money as the animals we saw yesterday were bringing, and it requires as much room for a scrub. It does not take any longer to feed nor any more fodder than a scrub, and yet so many people do not seem to be aware of this. We hope we can go out as missionaries throughout this Province preaching the gospel of pure-bred live stock, preaching the gospel of getting rid of the poorer class of bull. It might be well in many cases not to use the word scrub, as Mr. Flatt so well suggested, but we do want to send out missionaries who will do the work and bring Ontario to breed a better class of bull. Even the churches have to have missionaries once in a while with evangelistic services to stir them up a little when they get kind of dead, and I think perhaps this is a good time for us to do it also when we are moving along the forward lines—or reconstruction, as many people use the word—and I trust we may be able to accomplish a great deal before very long. Perhaps we could leave that there.

A DELEGATE: Could not the first missionary work be done in the breeders' barn-yards and not in the back concessions?

THE PRESIDENT: I think that is what is being done. We have a representative already appointed, and the Federal Department is paying that man, and he is out on the work now, and as Mr. Farrow has said, he is right in their district at present. He will go to any place where there is any missionary work to be done, and if one man is not enough, I am given to understand that the Governments are ready to send more. It is a matter of accomplishing something. That is what I understand.

Ontario Poultry Association

The Annual Meeting of this Association was held December 5th, 1919.

OFFICERS.

President	A. E. FIELD-MARSHALL.
First Vice-President	W. R. GRAHAM.
Second Vice-President	J. S. GREENSHIELDS.
Executive Committee	A. E. FIELD-MARSHALL, W. R. GRAHAM, J. S. GREENSHIELDS.
Secretary-Treasurer	R. W. WADE.
Auditor	G. DE W. GREEN.

DIRECTORS.

A. E. FIELD-MARSHALL, Beamsville.
W. R. GRAHAM, O.A.C., Guelph.
J. S. GREENSHIELDS, Toronto.
G. G. HENDERSON, Hamilton.
WM. MCNEIL, London.
WM. MOORE, Hamilton.
A. W. TYSON, Guelph.
RICHARD OKE, London.
WALTER ROSE, Teeswater.
W. J. ROBERTS, Hamilton.
J. H. SAUNDERS, London.
T. SIMPSON, Guelph.
W. W. SIMPSON, Guelph.

REPRESENTATIVES TO FAIR BOARDS.

Ontario Provincial Winter Fair: WM. MCNEIL. J. H. SAUNDERS, T. SIMPSON, A. W. TYSON.
Canadian National Exhibition: WM. MCNEIL.
Eastern Canada Live Stock Union: J. H. SAUNDERS.
Delegates to National Show: J. W. CLARK, A. E. FIELD-MARSHALL, J. H. SAUNDERS.
Western Fair, London: J. H. SAUNDERS, H. R. K. TOZER.
Central Canada Exhibition: ROBT. ESSEX, G. G. HENDERSON.

FINANCIAL STATEMENT.

OF THE ONTARIO POULTRY ASSOCIATION, FOR THE YEAR ENDING NOVEMBER 28TH, 1919.

RECEIPTS.

Cash on hand as per last report	$560 03	
Membership fees, 1919	600 00	
Total		$1,160 03

EXPENDITURES.

Directors' expenses	$343 05	
Eastern Canada Live Stock Union, membership fees, 1918	25 00	
Eastern Canada Live Stock Union, membership fees, 1919	25 00	
Ontario Provincial Winter Fair, grant to girl clerks	50 00	
Cash on hand	716 98	
Total		$1,160 03

G. G. HENDERSON,
President.

R. W. WADE,
Treasurer.

Ontario Department of Agriculture

REPORT

OF THE

WOMEN'S INSTITUTES

OF THE

Province of Ontario

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

Printed by
THE RYERSON PRESS.

To His Honour, LIONEL H. CLARKE.

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration, the Report of the Women's Institutes of Ontario for 1919.

Respectfully submitted,

MANNING W. DOHERTY,

Minister of Agriculture.

Toronto, 1920.

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Women's Institutes of Ontario, 1919

To the Honourable Minister of Agriculture:

In presenting the 1919 Annual Report of the work of the Women's Institutes of Ontario, which includes the proceedings of the Annual Conventions for Eastern, Western and Central Ontario, and the Statistical Report for 1918-19, as well as a few reports of representative Institutes, I wish to take the opportunity to review the development of the work, set forth the present status of the organization, outline plans for work and present possibilities for service through this representative body of home-makers in the rural districts, including residents of many villages and towns. We have issued during the year 1919 and sent to the officers and such members as made application for copies the following literature:

Circular No. 17—List of Meetings and Speakers for Summer Series.
Circular No. 18—Outline of Demonstration Lecture Courses: Suggested Constitution for the Federated Women's Institutes of Ontario; Hot Lunch in the Rural School; Medical Inspection of Schools; and a number of announcements.
Circular No. 24—Announcement of Annual Conventions, together with suggested programmes and lines of work for the Institutes.
Circular No. 25—Summarized Report of Conventions, and Reports of Branch and District Institutes.

The Development of the Work.

A growing interest in home problems (efficient construction and equipment of the house; the proper feeding of the growing child, the working man and the aged; healthful entertainment and recreation; instructive and entertaining reading) has naturally been followed by the members of the Institute taking part in community and national problems—the schools, community halls, public Institutions, the study of laws affecting women and children, economic problems, etc.

The activities of the Branches as outlined in the reports of the Conventions will indicate the breadth of the work undertaken. We give below two sample programmes:

King East Women's Institute—York County.

June—Care of the Eyes; Mental Dyspepsia; Uses of Buttermilk.
July—Departmental speaker and special programme.
August—Medical and Dental Inspection of Schools.
September—Visit from the Richmond Hill Institute and varied programme.
October—College Hospital; Waste No Food; Care of the Skin and Hair.
November—Help for the Blind; Foods that Fatten; Tuberculosis. Roll Call answered by Sewing Hints.
December—Christmas Readings and Christmas Gift Suggestions.
January—A Grab Bag Programme with Grab Bag Gifts.
February— Getting the Best in Life; Hot Suppers for Chilly Nights; Thrift.
March—Repairing for Leaks; Fish; Spoiled Children.
April—Furnishing Summer Rooms; Some of the Household's Best Friends; From Fifteen to Twenty.
May—Annual Meeting with election of officers, and addresses on Successful Marketing; Roll Call answered by Household Hints.

BLYTH WOMEN'S INSTITUTE—HURON COUNTY.

June—Living Up to Our Motto, "For Home and Country," and an address.
July—"Making the Best of What We Have"; "Cool Dishes for Summer."
August—Walton Institute supplied programme.
September—"Systematic Housekeeping and Labor Saving Devices"; "The Value of Fruit for Food."
October—"The Value of Keeping Domestic Accounts"; "Dangers of Luxury in Modern Life"; with roll call answered with Thanksgiving Thought.
November—Debate: "Resolved that the woman who spends two hours at the Institute meeting monthly is a better home-maker than the one who does not."
December—Report of Convention, with reading and music. Roll Call answered by Christmas Recipes.
January—Casserole Dishes: "Pictures and Their Influence"; Reading.
February—Social Evening by Music Committee.
March—"Effect of Home Influence on Our National and Political Life"; "Systematic House Cleaning"; and Roll Call answered by current event.
April—Spring Salads; Debate; "Resolved that Consolidated Schools are an Improvement on our Present System."
May—Annual Meeting, with reading. Roll Call answered by paying fee for coming year. Music was furnished at each meeting.

The accomplishments of the Institutes have revealed the capabilities of women to co-operate in doing those things which require combined effort, and there is now a band of some 30,000 women and girls who are ready to formulate policies, to devise means of accomplishment, and to do their part as individuals in attaining their objective. The demonstrations of effective effort by the women of Ontario through the Institute have stimulated like effort on the part of the rural women in other provinces as well as the British Isles, where they point to Ontario as an example and have established Institutes in over 1,600 centres. In a recent editorial in *The Journal of The Ministry of Agriculture,* published in London, England, complimentary reference was made to the fact that the British Institutes followed Ontario's example. Quotation from *Journal*:

> "Very soon the homes and the farms showed what changes could be accomplished through the efforts of an organized band of intelligent women. This example inspired other women, and before long the Institute movement had spread through Canada. In 1915 it reached Great Britain, by way of Wales, where in September of that year, at Llanfairpwll, Mrs. Watt, a British Columbian, started the first Women's Institute in Great Britain. It is, indeed, difficult to exhaust the list of all the Institute's activities. It promotes a higher cultivation of field and garden; it encourages pig and goat keeping, cheese making, fruit bottling, toy, hat and basket making, chair caning and co-operative marketing; it organizes egg collecting and communal kitchens. Women's Institutes are taking their share in the life of the country. They aim at improving the conditions of rural life by stimulating interest in the agricultural industry, developing co-operative enterprise, encouraging home and local industries, studying home economics, and providing centres for educational and social intercourse as well as for all local activities."

I am sure our Ontario members will read with much interest the above as well as the report on the British Institutes, as presented at our Conventions by Mrs. Watt and Miss Emily J. Guest.

PRESENT STATUS OF THE ORGANIZATION.

The 950 Branches are now in the position of each having accomplished some definite work of real worth, and stand ready and confident in their own power to deal with local problems and to meet local needs. They are also waiting to take part in those province-wide and dominion-wide campaigns which may be decided upon by their leaders in the Provincial Federation, elected by representative women from all parts of the province.

Having been successful in:

(*a*) Imparting valuable information to their members on home problems.

(*b*) Establishing Community Halls, Rest Rooms, Libraries, etc. in some hundreds of centres.

(*c*) Demonstrating the need and practicability of Medical School Inspection to a degree which led the Government to introduce what will soon, we believe, develop into an effective universal system of Medical Inspection for the rural communities of Ontario, and result in creating a universal interest in Health Problems and effective methods of proper feeding, care and preventive treatment.

(*d*) Creating a consciousness of local and national responsibility on the part of the women.

(*e*) Demonstrating to the satisfaction of all that health problems, school equipment and methods, the social life of the community, the support of charitable institutions and other activities in which the whole people are concerned, requiring the co-operation of the women by way of advice and practical assistance, have been effectively dealt with by the Institutes:—

The women of Ontario stand ready to go forward to greater things.

The time is ripe for an aggressive policy and effective work on the part of the Institutes. The officers of the Provincial Federation have already shown their capabilities in stimulating and extending the work. Comprehensive programmes have been outlined by the Federation embracing the following:

Public Health and Child Welfare	**Mrs. (Dr.) Wilson, Parkhill.**
Education and Better Schools	**Miss K. McIntosh, Brampton.**
Agriculture	**Mrs. R. G. Leggett, Newboro.**
Immigration	**Miss D. M. Sutherland, Parliament Buildings, Toronto.**
Legislation	**Mrs. Wm. Todd, Orillia.**
Publicity	**Miss E. M. Chapman, Farmers' Magazine, Toronto.**
Home Economics	**Miss M. U. Watson, McDonald Inst., Guelph.**

A Means to an End.

There are many services which various departments of the Government can render effectively only when they have local organizations with which to co-operate. So far as the Department of Agriculture is concerned, the Institutes have been furnished through the co-operation of representative women of the Institutes with directions as to organizing, methods of work, and literature bearing upon problems in which all women of responsibility are interested. In addition to this, lecturers have been furnished to give instruction through series of meetings, as indicated in Part II of the Women's Institute Report. We have also furnished specialists—domestic science graduates, nurses and doctors, to give instruction in short courses of ten lessons each in "Home Nursing and First Aid," "Sewing," and "Domestic Science" to some 25,000 women and girls.

The Institutes have also been an important factor in making effective some of the work undertaken by the Agricultural Representatives, especially in so far as School Fairs, Egg Circles, and improvement in the raw material delivered at our factories, creameries, etc., are concerned.

The Institutes have effectively co-operated with the Department of Public Health in placing the splendid literature which they have for distribution in the hands of the members of the Institutes and in making a study of the care of children, the treatment for contagious diseases, etc., etc.

They have also co-operated with the Department of Education in Medical School Inspection, in securing school nurses, in establishing libraries, in taking charge of libraries which had been allowed to fall into disuse, in furnishing circulating libraries to remote sections, etc. Institutes have also co-operated with the Fire Marshal's Department and the Department of Neglected and Dependent Children.

A great many organizations, including the Canadian National Institute for the Blind, the Red Cross Society, the Victorian Order of Nurses, the Travellers' Aid Section of the Y.W.C.A. and the W.C.T.U. the Home and School Clubs, the Navy League, the Women's College Hospital, etc., have appreciated very much the co-operation of the Institutes in making their efforts effective in the rural districts. The Institutes have, from year to year, become more and more an organization of the whole people, and judging from the enthusiasm shown in the Branches generally, especially those which have been established for many years, the time is opportune for an aggressive campaign. The work cannot be carried on effectively without more assistance of a definite character, and I beg to draw your attention to my recommendation at the last Conventions that instead of devoting so much of our funds to sending lecturers to isolated meetings of a general character, that specialists be employed to take charge of definite features of work, including the lines indicated in the Convention Report (see page 22).

Having been associated with the Institutes for the past sixteen years, and having watched their development with much satisfaction, I, nevertheless, appreciate the fact that the progress has not been as rapid or the work as effective as it should have been, due largely to lack of sufficient and efficient assistance of a permanent character.

I trust that the Institutes may continue to receive he liberal support of the Government.

GEO. A. PUTNAM,
Superintendent.

FEDERATED WOMEN'S INSTITUTES OF ONTARIO, 1919-1920.

OFFICERS.

Honorary President	MR. GEO. A. PUTNAM, Department of Agriculture, Toronto
President	MRS. WM. TODD, Orillia.
Vice-Presidents	MISS E. D. WATSON, Ayr. MRS. R. V. FOWLER, Perth. MRS. JAMES PATTERSON, R.R. No. 1, Gadshill.
Recording Secretary	MRS. B. O. ALLEN, 629 S. Vickers Street, Fort William.
Corresponding Secretary and Treasurer	MRS. CHAS. MACOUN, Campbellford.

Executive—President, Vice-Presidents, and the following Directors: MISS HELEN L. BEARDMORE, Pt. Credit; MRS. J. SEXSMITH, Havelock; MRS. M. E. FREEBORN, Magnetawan; MRS. W. T. MEADE, R.R. No. 3, Blenheim; MISS M. E. PEARSON, Merrickville.

BOARD OF DIRECTORS.

Eastern Ontario.

No. 1. Dundas, Glengarry, Prescott, Stormont	Mrs. H. A. Gollan, Morewood.
" 2. Carleton, Lanark, Renfrew	Mrs. R. V. Fowler, Perth.
" 3. Addington, Amherst Island, Brockville, Frontenac, Grenville, Leeds, Lennox	Miss M E. Pearson, Merrickville.

Central Ontario.

No. 4. Hastings, Northumberland, Prince Edward	Mrs. Chas. Macoun, Campbellford.
" 5. Durham, Haliburton, Peterboro, Victoria	Mrs. J. Sexsmith, Havelock.
" 6. Ontario, York	Miss M. Scott, Agincourt.
" 7. Dufferin, Grey	Mrs. A. E. Myles, Kimberley.
" 8. Halton, Peel, Welland, Wellington	Miss H. Beardmore, Port Credit.
" 9. Haldimand, Lincoln, Welland, Wentworth	Mrs. C. E. Horning, 445 Wentworth Street, Hamilton.
" 10. Brant, Norfolk, Oxford, Waterloo	Miss E. D. Watson, Ayr.
" 11. Muskoka, Simcoe	Mrs W. Todd, Orillia.
" 12. Parry Sound, Temiskaming	Mrs. M. E. Freeborn, Magnetawan.
" 13. Algoma, Manitoulin, St Joseph Island, Nipissing	Mrs. G. J. Priddle, Silver Water.
" 14. Kenora, Rainy River, Thunder Bay	Mrs. B. O Allen, 629 S. Vickers St., Fort William.

Western Ontario.

No. 15. Bruce, Huron, Perth, Union	Mrs. James Patterson, R.R. No. 1, Gadshill.
" 16. Lambton, Middlesex	Mrs. J. G. Dawes, Thedford.
" 17. Elgin, Essex, Kent	Mrs. W. T. Meade, R.R. No. 3, Blenheim.

Advisory Committees.

Representatives from Eastern Ontario to co-operate with Board of Directors.—Mrs. W. D. McLeod, Sub-division 1; Mrs. I. K. Kelly, Almonte, Sub-division 2; Mrs. R. G. Leggett, Newboro, Sub-division 3.

Representatives from Carleton County.—Mrs. G. R. Bradley, 152 Third Ave., Ottawa; Mrs. R. H. Grant, R.R. No. 2, Stittsville.

President	Miss M. E. Pearson, Merrickville.
Vice-President	Mrs. Geo. Bradley, 152 Third Ave., Ottawa.
Secretary-Treasurer	Mrs. I. K. Kelly, Almonte.

A similar committee, with three representatives, one from each sub-division and two from Middlesex County, was appointed at the Western Convention, and is as follows:—

Mrs. R. T. Phillips, Lucknow, Sub-division 1; Mrs. T. Sims, West Lorne, Sub-division 2; Mrs. A. Woods, Kerwood, Sub-division 3; Mrs. George Edwards, Komoka, and Mrs. W. A. Willsie, Belmont, for Middlesex County.

President	Mrs. Geo. Edwards, Komoka.
Vice-President	Mrs. J. Patterson, R.R. No. 1, Gadshill.
Secretary-Treasurer	Mrs. Malcolm Gray, Lobo.

Conveners of Standing Committees.

Public Health and Child Welfare	Mrs. (Dr.) M. Wilson, Parkhill.
Education and Better Schools	Miss K. I. MacIntosh, Brampton.
Agriculture	Mrs. R. G. Leggett, Newboro.
Immigration	Miss D. M. Sutherland, Parliament Blds., Toronto.
Legislation	Mrs. Wm. Todd, Orillia.
Publicity	Miss E. M. Chapman, Farmers' Magazine, Toronto.
Home Economics	Miss M. U. Watson, MacDonald Institute, Guelph.

All members belonging to Branch Institutes which have a membership of ten during the first year and fifteen during succeeding years and which hold at least six meetings during the year, will be considered members of the Provincial Federation.

ONTARIO WOMEN'S INSTITUTES—STATISTICAL REPORT, 1918-19.

Institute District.	Membership.	No. of meetings held.	Total attendance.	No. of papers or addresses given.	Receipts.					Expenditure.								
					Cash on hand as per last report.	Membership fees.	Grants.	Miscellaneous	Total receipts	Expenses of meetings.	Officers' salaries and expenses.	Postage and stationery.	Printing and advertising.	Lecturers' expenses.	Books and periodicals	Miscellaneous	Total expenditure.	Balance.
					$ c.	$ c.	$ c,	$ c,	$ c,	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Addington	21	8	63	4	48 02	5 25	15 00	....	68 27	......	......	69	......	......	5 00	12 10	17 79	50 48
Algoma, Centre..	122	55	1,027	34	90 72	29 75	49 50	581 11	751 08	2 00	61 00	6 18	4 85	10 00	13 55	356 75	454 33	296 75
Algoma, East ...	136	71	920	48	100 65	39 75	15 00	1,002 49	1,157 89	6 00	5 00	7 41	4 00	1 90	......	742 93	767 24	390 65
Algoma, N. Shore	92	61	657	22	....	19 25	40 00	351 71	410 96	10 60	24 28	12 29	3 52	1 25	......	260 78	312 72	98 24
Amherst Island.	55	8	96	6	82 06	13 75	35 00	297 25	428 06	2 50	15 50	3 72	......	5 25	4 00	305 13	336 10	91 96
Brant, North ...	635	137	3,866	147	793 32	147 00	113 00	4,870 92	5.924 24	45 26	72 20	44 79	60 60	26 35	24 42	5,049 89	5,323 51	600 73
Brant, South....	361	126	2.595	69	499 29	80 50	127 00	2,010 24	2,717 03	7 25	55 00	40 16	28 12	35	7 25	2.232 62	2,370 75	346 28
Brockville......	112	12	365	12	232 65	28 00	32 00	1,018 20	1,310 85	6 00	......	2 24	36 55	3 00	3 38	799 07	850 24	460 61
Bruce, Centre...	185	74	1,898	96	280 55	71 50	351 14	1,036 09	1,739 28	6 00	27 04	8 76	19 10	6 50	......	1,236 05	1,303 45	435 83
Bruce, North ...	239	98	1,303	71	219 37	62 00	461 75	1.658 66	2,401 78	62 80	37 00	36 31	24 71	36 00	6 50	1,808 41	2,011 73	390 05
Bruce, South....	235	63	1.695	76	286 39	56 75	65 00	3,143 97	3,552 11	44 00	30 90	12 76	31 22	20 00	......	2,379 69	2,518 57	1033 54
Bruce, West	302	63	4,044	79	982 32	67 25	67 00	5,219 28	6,335 85	10 96	33 25	15 87	28 50	17 10	6 70	4.915 09	5,027 47	1308 38
Carleton........	342	102	3,085	69	230 56	75 25	110 00	2,102 08	2,517 89	35 00	15 00	29 51	19 30	33 10	2 38	2,111 26	2,245 55	272 34
Dufferin........	580	296	4.066	173	535 59	136 00	254 00	4,527 84	5,453 43	71 50	80 18	45 96	71 65	21 40	9 75	4,347 91	4,648 35	805 08
Dundas.........	278	48	982	43	1,031 56	69 50	50 00	7,426 77	8,577 83	56 47	37 30	15 18	27 15	35 15	1 40	5,573 70	5,746 35	2831 48
Durham, East...	378	183	1,731	47	561 57	77 25	113 00	1,088 55	1,840 37	12 50	25 55	17 77	40 75	21 30	2 30	1,032 64	1,152 81	687 56
Durham, West ..	322	105	2,390	82	360 62	80 50	94 00	2,047 12	2,582 24	9 10	53 50	12 79	18 27	7 25	35 78	2,052 22	2,188 91	393 33
Elgin, East	233	91	1,720	59	286 08	53 75	286 05	2,131 30	2,757 18	17 45	62 65	8 46	28 04	50	1 20	2,224 42	2,342 72	414 46
Elgin, West.....	279	98	2,091	75	762 49	64 75	133 00	4,436 07	5.396 31	10 50	50 00	16 44	14 70	6 60	1 00	4,100 88	4,200 12	1196 19
Essex, North....	150	64	1,183	13	184 22	39 00	65 00	1,596 76	1,884 98	25 43	56 33	75 92	13 50	7 25	5 00	1,129 60	1,313 03	571 95
Essex, South....	274	59	1.365	50	400 69	67 00	71 00	1,463 15	2,001 84	37 01	36 00	15 05	41 10	14 15	......	1,201 55	1,344 86	656 98
Frontenac	78	37	588	24	122 83	19 50	60 66	506 36	709 35	......	6 00	3 29	7 15	......	75	601 63	618 82	90 53
Frontenac, Cen..	41	21	252	10	45 09	9 75	32 00	151 96	238 80	......	......	71	......	......	......	201 74	202 45	36 35
Glengarry	247	78	1,125	58	217 15	84 50	58 00	2,144 97	2,504 62	17 54	26 69	18 05	13 30	4 20	10 75	2,104 64	2,195 17	309 45
Grenville, South.	144	40	601	35	405 80	36 00	59 00	1,724 58	2,225 38	......	10 00	9 44	4 00	......	......	1,861 65	1,885 09	340 29
Grey Centre	540	205	2,819	173	1,081 65	143 75	197 00	2,996 43	4,418 83	16 50	93 15	71 49	46 19	52 75	24 60	3,064 48	3,369 16	1049 67
Grey, North	379	149	3.071	112	280 88	93 00	101 00	2,425 97	2,900 85	17 55	34 00	61 20	42 40	30 20	......	2,190 55	2,375 90	524 95
Grey, South.....	272	108	2,136	112	470 20	64 00	98 00	1,280 82	1,913 02	19 00	31 90	21 94	38 20	27 55	4 05	1,265 41	1,408 05	504 97
Haldimand	742	332	3,771	213	872 06	193 00	555 00	6,082 07	7,702 13	70 80	73 15	41 16	26 35	19 75	14 40	5,931 29	6,176 90	1525 23
Haliburton......	111	29	287	14	158 19	27 75	56 33	215 69	457 96	9 00	5 00	4 52	......	4 00	35	197 73	220 60	237 36
Halton	432	127	2,791	37	886 17	99 00	210 00	3.103 93	4,299 10	21 58	100 15	46 70	22 68	6 15	6 85	2.971 98	3.176 09	1123 01

Hastings, East..	253	127	2,293	56	587 16	63 25	483 00	3,408 60	4,542 01	......	60 00	8 83	18 82	7 75	......	3,605 54	3,700 94	841 07
Hastings, North.	337	89	1,828	83	720 29	84 25	71 00	4,986 10	5,861 64	84 60	85 60	19 54	78 85	20 50	......	4,004 89	4,293 98	1567 66
Hastings, West.	151	54	978	6	252 83	46 00	573 00	1,480 58	2,352 41	......	25 00	13 70	7 75	12 00	13 50	1,780 63	1,852 58	499 83
Huron, East	233	148	2,085	66	542 45	56 00	74 00	3,445 17	4,117 62	18 00	48 50	16 45	18 50	7 50	1 50	3,571 97	3,682 42	435 20
Huron, South ...	51	42	662	6	170 60	14 75	28 00	857 75	1,071 10	7 11	15 00	7 08	1 40	6 00	3 96	799 22	839 77	231 33
Huron, West	389	222	4,214	130	940 02	93 00	64 00	4,471 24	5,568 26	63 89	35 00	18 05	24 59	30 18	4 42	4,393 26	4,569 39	998 87
Kenora	128	43	633	42	204 92	32 00	28 00	2,084 24	2,349 16	......	12 00	8 36	3 50	8 00	......	2,053 35	2,085 21	263 95
Kent, East......	314	114	2,139	59	483 74	79 00	242 89	3,560 19	4,365 82	43 31	133 36	24 23	50 10	15 70	1 75	2,944 34	3,212 79	1153 03
Kent, West	530	168	3,525	94	942 09	132 50	805 00	5,546 99	7,426 58	27 40	75 70	27 12	50 20	21 85	4 00	5,884 48	6,090 75	1335 83
Lambton, East..	542	110	1,696	126	1,099 30	124 75	244 50	4,943 14	6,411 69	73 00	56 40	38 79	43 78	6 50	1 00	4,511 54	4,731 01	1680 68
Lambton, West .	390	205	2,178	39	716 16	98 25	656 50	3,162 56	4,633 47	12 00	41 00	37 25	36 90	8 50	21 00	3,372 06	3,528 71	1104 76
Lanark, North..	314	159	2,122	11	966 16	71 25	88 00	4,322 25	5,447 66	19 75	10 00	18 22	19 05	6 25	4 77	4,800 82	4,878 86	568 80
Lanark, South ..	255	117	1,004	34	681 02	64 25	100 00	2,835 56	3,680 83	10 60	48 06	20 13	16 90	21 50	5 68	2,866 52	2,989 39	691 44
Leeds, South....	370	88	1,322	47	530 54	71 00	143 00	1,866 07	2,610 61	12 65	92 85	20 53	23 20	8 25	1 50	1,914 57	2,073 55	537 06
Leeds, North and Grenville.....	151	56	686	29	504 15	46 00	46 00	1,509 92	2,106 07	8 75	......	7 24	18 76	......	......	1,389 32	1,424 07	682 00
Lennox.	248	42	1,060	10	142 40	62 00	605 30	861 35	1,671 05	6 50	15 00	14 54	15 10	13 00	28 10	1,218 24	1,310 48	360 57
Lincoln.	722	258	4,224	103	1,015 24	166 50	1111 00	3,295 87	5,588 61	26 55	82 25	44 35	45 45	24 85	1 40	4,382 16	4,606 99	981 62
Manitoulin, East.	218	140	3,000	44	411 31	54 50	67 00	879 85	1,412 66	11 55	53 30	43 31	2 00	3 10	3 52	798 73	915 51	497 15
Manitoulin, West	192	109	2,450	70	432 29	47 25	88 00	1,453 44	2,020 98	31 50	76 46	27 79	16 65	4 00	......	1,200 09	1,356 49	664 49
Middlesex, East.	321	95	2,241	73	743 96	80 25	372 00	2,396 37	3,592 58	5 50	50 00	6 60	11 06	7 40	11 43	2,764 37	2,856 36	736 22
Middlesex, North	400	95	1,920	63	1,294 05	97 00	295 23	5,255 15	6,941 43	7 00	53 80	20 62	16 39	4 31	7 06	5,576 13	5,685 31	1256 12
Middlesex, West.	246	127	2,421	73	567 78	73 00	350 00	3,991 40	4,982 18	17 14	58 75	19 87	29 92	12 30	4 00	3,577 22	3,719 20	1262 98
Muskoka Centre.	73	32	423	8	59 34	18 25	34 00	410 40	521 99	1 40	16 00	7 98	2 35	9 00	16 75	362 14	415 62	106 37
Muskoka, North.	187	97	1,384	37	616 81	46 75	76 00	524 50	1,264 06	2 50	39 25	27 50	10 15	24 50	4 20	590 81	698 91	565 15
Muskoka, South.	209	167	1,604	51	478 10	51 25	74 00	1,327 20	1,930 55	20 75	32 50	55 42	12 30	13 70	5 50	1,184 94	1,325 11	605 44
Nipissing, East..	23	9	160	3	15 25	5 25	3 00	175 41	196 91	......	......	60	......	3 00	75	174 73	179 08	17 83
Nipissing, West.	17	10	77	3	5 29	4 50	3 00	21 65	34 44	......	......	1 43	......	......	......	14 83	16 26	18 18
Norfolk, North ..	459	175	3,378	110	495 46	119 25	365 00	2,869 42	3,849 13	17 50	45 80	26 29	47 89	28 68	3 75	2,827 84	2,997 75	851 38
Norfolk, South ..	339	105	1,865	136	316 51	84 50	62 00	1,691 13	2,154 14	20 63	36 68	20 54	40 42	19 10	1 95	1,366 68	1,506 00	648 14
Northumberland, East	433	211	3,911	153	584 46	108 25	527 00	4,605 19	5,824 90	39 72	100 00	25 33	53 70	19 00	10 00	4,584 65	4,832 40	992 50
Northumberland, West.........	299	130	2,831	124	217 91	74 75	114 00	3,208 54	3,615 20	8 75	56 25	28 91	46 96	19 00	6 25	2,720 11	2,886 23	728 97
Ontario, North..	257	127	2,276	53	341 06	62 50	296 55	1,640 75	2,340 86	21 00	25 00	24 47	42 30	8 05	3 70	1,771 32	1,895 84	445 02
Ontario, South..	385	122	2,666	103	938 91	95 00	92 00	2,397 33	3,523 24	15 50	65 00	16 28	12 00	1 75	5 00	2,397 73	2,513 26	1009 98
Oxford, North...	125	51	1,261	23	433 15	31 00	37 00	629 25	1,130 40	18 25	40 00	4 80	10 00	14 20	......	832 24	919 49	210 91
Oxford, South...	563	205	4,207	95	425 45	133 50	229 00	4,394 17	5,182 12	49 00	100 90	31 45	95 19	3 35	2 00	4,142 19	4,424 08	758 04
Parry Sound, N.	144	89	1,077	60	218 50	35 75	52 00	1,377 00	1,683 25	10 56	30 00	9 05	14 96	2 95	3 00	1,260 22	1,330 74	352 51
Parry Sound, S.	211	102	630	17	172 61	48 50	101 00	1,727 22	2,049 33	61 25	62 59	39 65	17 90	9 00	18 14	1 486 53	1,695 06	354 27
Parry Sound, W.	43	26	370	15	103 13	10 75	6 00	310 76	430 64	......	......	7 81	2 85	......	......	381 65	392 31	38 33
Peel	563	150	3,095	89	1,194 56	139 50	525 00	6,931 82	8,790 88	23 55	51 43	53 34	19 05	11 25	9 75	7,765 73	7,934 10	856 78
Perth, North....	181	74	1,788	47	438 73	45 25	647 59	2,383 51	3,515 08	5 85	40 00	18 81	28 84	20 80	13 50	2,816 71	2,944 51	570 57
Perth, South....	239	78	1,714	101	341 87	60 75	281 05	1,634 52	2,318 19	11 50	47 00	17 38	16 55	10 00	......	1,829 79	1,932 22	385 97
Peterboro', East.	117	105	1,493	32	437 66	26 00	28 00	618 38	1,110 04	40 00	......	4 53	11 51	5 75	......	792 08	853 87	256 17

ONTARIO WOMEN'S INSTITUTES—STATISTICAL REPORT, 1918-19.—Continued.

Institute District.	Membership.	No. of meetings held.	Total attendance.	No. of papers or addresses given.	Receipts.					Expenditure.								
					Cash on hand as per last report.	Membership fees.	Grants.	Miscellaneous	Total receipts	Expenses of meetings.	Officers' salaries and expenses.	Postage and stationery.	Printing and advertising.	Lecturers' expenses.	Books and periodicals.	Miscellaneous	Total expenditure.	Balance.
					$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Peterboro', North	24	5	89	3	51 34	6 00	10 00	25 90	93 24	......	......	60	......	4 00	......	40 00	44 60	48 64
Prescott	68	18	162	2	215 52	12 00	10 00	1,282 74	1,520 26	......	......	2 32	......	......	......	1,258 11	1,260 43	259 83
Prince Edward..	985	140	3,239	56	445 86	241 25	1411 83	9,017 06	11116 00	49 50	35 00	29 14	45 20	5 20	1 25	10401 49	10566 78	549 22
Rainy River	332	63	1,958	70	237 26	85 75	406 50	2,272 99	3,002 50	52 00	70 45	26 96	19 28	22 60	10 83	2,227 48	2,429 60	572 90
Renfrew, North.	179	64	1,437	45	764 11	41 50	50 00	1,270 84	2,126 45	12 50	25 00	15 91	9 50	2 00	......	1,911 90	1,976 81	149 64
Renfrew, South.	251	121	2,323	58	297 68	62 50	80 00	2,625 54	3,065 72	1 44	15 00	26 51	21 05	11 75	2 10	2,332 84	2,410 69	655 03
Simcoe, Centre..	323	155	2,536	108	285 72	72 75	104 00	1,399 83	1,862 30	15 22	72 95	25 50	23 47	26 30	2 85	1,285 36	1,451 65	410 65
Simcoe, East....	569	295	3,980	100	474 30	127 75	491 00	3,653 34	4,746 39	20 25	108 30	62 14	21 85	31 00	1 25	3,714 84	3,959 63	786 76
Simcoe, South ..	241	78	1,159	40	501 77	59 75	90 00	3,185 63	3,837 15	10 00	34 65	16 89	36 25	8 85	16 00	2,892 59	3,015 23	821 92
Simcoe, West ...	278	183	2,858	66	534 73	65 50	285 00	3,967 41	4,852 64	27 65	90 00	16 83	31 10	21 90	26 70	4,034 39	4,248 57	604 07
Stormont.......	184	64	935	8	970 27	46 00	295 00	1,582 56	2,893 83	14 55	18 85	9 76	8 64	4 50	2 75	2,074 80	2,133 85	759 98
St. Joseph Island	88	68	416	9	74 81	22 00	34 00	453 91	584 72	1 85	25 00	11 68	85	17 00	90	464 25	521 53	63 19
Temiskaming ...	425	198	1,867	80	704 15	106 50	161 00	3,739 04	4,710 69	18 55	52 35	115 77	23 09	14 00	8 30	3,474 68	3,706 74	1003 95
Thunder Bay ...	238	109	1,411	81	576 82	61 00	76 00	1,657 61	2,371 43	12 00	36 00	33 13	28 95	7 00	10 60	1,888 65	2,016 33	355 10
Union	85	32	594	26	43 63	22 75	315 50	515 46	897 34	7 70	32 10	3 90	13 85	2 00	28 40	659 72	747 67	149 67
Victoria, East ..	261	112	2,272	138	244 52	65 25	126 00	877 86	1,313 63	23 45	48 30	19 99	20 16	65	75	877 83	991 13	322 50
Victoria, West..	459	210	3,647	84	1027 72	112 25	233 00	2,591 59	3,964 56	61 65	70 40	36 82	33 97	15 25	60	2,475 76	2,694 45	1270 11
Waterloo, North.	230	120	2,641	87	109 17	44 75	214 00	816 89	1,184 81	1 96	33 45	9 19	9 00	6 40	......	981 39	1,041 39	143 42
Waterloo, South.	331	69	1,727	54	457 39	82 00	93 80	3,832 36	4,445 55	77 04	64 64	15 71	48 77	15 70	6 69	3,740 09	3,968 64	476 91
Welland	495	142	2,709	113	1283 37	130 25	998 00	4,469 85	6,881 47	51 90	155 87	30 71	70 84	12 70	20 05	5,275 46	5,617 53	1263 94
Wellington, Cent.	260	106	2,049	63	282 13	66 25	198 00	2,293 74	2,840 12	19 50	34 00	25 76	6 25	2 00	6 98	2,347 33	2,441 82	398 30
Wellington, East	121	56	841	19	85 50	30 50	147 00	754 55	1,017 55	4 75	55 30	9 91	6 47	8 90	3 00	795 94	884 27	133 28
Wellington, South	293	98	2,475	76	260 68	70 75	402 00	2,406 61	3,140 04	1 20	50 55	15 56	22 10	12 55	17 49	2,729 71	2,849 16	290 88
Wellington, West	203	131	391	64	454 01	46 00	465 00	2,958 48	3,923 49	8 00	129 75	17 29	15 70	17 50	4 97	3,153 89	3,347 10	576 39
Wentworth, N...	387	120	2,641	87	1658 23	91 25	471 00	2,726 25	4,946 73	37 21	77 00	21 08	19 44	13 50	5 12	3,880 26	4,053 61	893 12
Wentworth, S ..	498	293	4,365	123	919 45	123 75	173 00	2,733 47	3,949 67	99 02	121 67	31 14	33 52	4 95	......	2,672 97	2,963 27	986 40
York, East......	462	118	2,811	113	1282 08	113 00	151 00	2,741 39	4,287 47	25 25	43 50	41 46	50 25	6 95	12 11	2,952 53	3,132 05	1155 42
York, North	330	149	2,729	110	984 00	77 50	101 00	3,201 47	4,363 97	15 53	51 45	24 54	26 75	8 00	......	3,474 92	3,601 19	762 78
York, West.....	296	113	2,414	95	414 02	74 00	98 00	1,426 14	2,012 16	34 25	45 98	61 88	20 75	6 40	7 00	1,250 58	1,426 84	585 32
Totals........	28,815	11,001	194,150	6,565	49,910	7,072	21,754	244,615	323,351	2,209	4,671	2,349	2,417	1,201	611	246,246	259,704	63,647

Eastern Ontario Convention

The Fifth Annual Convention of the Women's Institutes of Eastern Ontario was held in the Council Chamber, City Hall, Ottawa, on Wednesday and Thursday, October 22nd and 23rd, with an attendance from the Eastern Division of 150 at the opening session, 250 during the afternoon of Wednesday and about 300 for the following sessions.

Mrs. Jas. Reid, R. R. No. 2, Renfrew, presided at the opening session. The singing of the Institute Ode, and " O God our Help in Ages Past," was followed by the repeating of the Lord's Prayer in unison.

Mrs. Reid after emphasizing the importance of comradeship and neighborliness which are so general in the Institute, said: " We have won the war, but all the problems of the reconstruction period are facing us. I have spoken with a great many Institute workers, and they say that now that the war is over, and there is no Red Cross work to do and no soldiers' boxes to supply, there is a sort of inertia in the Institutes—they have lost interest. Probably this is the reaction after the strenuous work we have had during the past four years, but let us hope that during these sessions we will receive a stimulus and be able to take home splendid thoughts and ideas to our Districts and Branches, and when we are discussing ways and means of bettering our communities and the boys and girls in them, let us not forget the duty we owe to our own homes and our own boys and girls, and that our own homes must be benefited by our lives first.

We read a great deal of a wonderful movement sweeping over our country now—the Forward Movement, but the home must be the centre of the Forward Movement. Our boys and girls are not altogether dependent on the home training; if they were it would be a great pity. We know of some families who disregard the Church, and they disregard the God that Church worships. You and I must make our lives patterns for others. The war has taught us that the slacker is despised. I wonder how many of us when we look into our hearts have not found that we have been slackers in one way or another. There has been a meeting—perhaps we were on the programme—but we had some work at home, perhaps we had not done our washing, or our ironing was behind, and we missed that meeting. Perhaps that very meeting that you or I missed was the one that would have meant a great deal in the life of somebody else.

Then there has been a wonderful change—a wonderful opportunity for the women of our country to express themselves. There was no agitation noticeable, and yet we were given the franchise, and now we have the right to use it. Let us have high ideals in the use of the ballot; let us disregard the little petty grievances and try to educate ourselves and the Women's Institutes along the broad, noble lines of citizenship and service; let us not confine ourselves to partyism, but think of the grand opportunity in our country for true citizenship.

Mrs. Jean Muldrew, of the Soldiers Settlement Board, spoke on the problems of the returned men and strongly urged the women to take an interest in returned men in their neighborhood and not leave everything to official bodies.

HOME INDUSTRY EXHIBIT, LOANED BY MRS. ALFRED WATT, M.A., ORGANIZER OF INSTITUTES IN ENGLAND AND WALES.

The exhibit consisted of photographs of prominent Institute workers with pictures of their homes and farms; leaflets issued by the Board of Agriculture; programmes, plays and books written by Institute members; samples of songs, membership cards, rules, posters, and articles which the members are making for sale to raise the standard of crafts and workmanship in the villages, such as soft toys, fur craft and basketry (ozier and rush work). Soft toy making and fur craft were entirely in the hands of the Germans and Austrians before the war, but are now largely carried on, through the efforts of the Women's Institutes, by the village women of England.

Most of the members of the Institutes in England are poor women whose lives have been bounded largely by their own homes and their own villages, and these articles were given to Mrs. Watt for exhibition as marks of affection from the women of England towards the Women's Institutes of Canada. There is slowly coming up in the most humble rural minds a feeling of the greatness of the Empire, and they wish to identify themselves more closely with the Women's Institutes in the great Dominion.

MISS M. E. PEARSON, Merrickville, presided at the afternoon session which opened with the singing of God Save the King, after which Rev. W. H. Cramm, Westboro, led in prayer, followed by the reading of Psalm 67.

ADDRESS OF WELCOME.

MRS. JAS. WILSON, PRESIDENT OF THE LOCAL COUNCIL OF WOMEN.

For many years I have been interested in the Women's Institutes, and during these last years I have drawn close to many of the members of these Institutes because of the splendid work they have done through the Red Cross. I came across so many splendid women that it showed me how great an opportunity the Women's Institutes had to bring forth all that is best in a woman, for there are many of us who would never know what our talents are, and I know many members of the Women's Institutes have found themselves in their work; they have discovered they are great organizers and great leaders. It would be a terrible pity if those women with their great talents had been lost to the community. In your Institute work you are learning how to conduct a meeting, how to become organizers, how to lead, and the opportunity may occur in your lives of taking a great part for which you will be now prepared.

You women are all enfranchised; you have some leisure in the country, full though your lives are, to read and to study. Now, it is up to you to read and to think carefully, to be a guide to the people in your neighborhood and indirectly—not by preaching—to be a guide to these men who now have the destinies of this Province in their hands. As has been said, there never was a great man but he had a great mother; you are the mothers of the race, and you are the wives of the present men, and therefore great power lies in your hands, one which I know you will exercise for good. Now that politics have been taken out of party hands and new men, untrained and untrammelled by party machines have come to power, it is your great opportunity to wield an enormous influence, and really bring forward these reforms and that progress which we have all yearned for.

The Women's Institutes can be a centre for the study of all those subjects which are most important to us, the study of what we call "Civics," social organization, social welfare, and there is a tremendous field before you because so many of your members are mothers. We know that one of the most important studies at the present time is that of child welfare in all its branches and you should agitate to have special schools and specially trained teachers.

The speaker made a strong appeal that the children below normal receive the best we can give in education, training and care.

REPLY TO ADDRESS OF WELCOME.

Mrs. Chas. Yates, Athens.

We appreciate these hearty greetings and kind words of commendation more deeply when we know that they are given not from the social standpoint or because it is a duty of respect that home organizations owe a visiting one, but because the organizations which Mrs. Wilson represents are acquainted with the vastness of work accomplished by the Institute, and their unlimited capacity for service. They know, too, the material out of which the Institute is made—energy, pluck, perseverance and everything else worth while which makes the Society strong and efficient, well worthy of being recognized as a partner and an efficacious factor in the present process of reconstruction.

Because you have been given the privilege of attending the Convention, you have added responsibility. You are sent here to gather new life, fresh interest, enthusiasm and a fund of knowledge which you are to impart to your own Institute. You are to take to your Institute members such information as will make them glad they belong to such an organization, and make them feel there is a burden of responsibility resting upon them for the welfare of home, community and national life. Impress upon them the knowledge of the many opportunities open for Institute service and their ability to take advantage of the same. Many suggestions for new work can be gathered. I think each delegate should reserve a space in her note-book, headed: suggestions for my Institute, and whenever you hear a suggestion which appeals to you as being appropriate for your Institute, jot it down, and see how many you can have in your report.

By the increased Women's Institute subscriptions to newspapers and magazines, and the larger number of books read, we are shown that the war has aroused an unprecedented activity of thought. Now we know that thought is a great force. It is the prime mover of human conduct. All that makes a figure on the great theatre of the world, the employments of the busy, the enterprises of the ambitious, the exploits of the warlike, the virtues which form the happiness, and the crimes which occasion the misery of mankind, originate in the silent, secret recess of thought. During the war, the great thought forces were united and led by the spirit of self defence against a common foe; now, that foe is practically removed, and man's thoughts are still led by the spirit of self defence against a real or an imaginary foe, thus occasioning so many strikes and kindred disturbances. This thought force is a great asset to a nation but must be properly directed. There is work for us.

ADDRESS.

Geo. A. Putnam, Superintendent of Women's Institutes, Toronto.

It is indeed a pleasure to again meet with representatives from the Institutes of Eastern Ontario, which in themselves constitute a Society of no mean proportions, embracing 104 branch organizations in twenty districts, with a membership of 3,338. These figures include four Junior or Girls' Institutes. Meetings, in addition to patriotic gatherings, to the number of 1,072 were held during the year, with an attendance of something over 18,000. The number of Institutes in each district varies from one to thirteen.

It is an opportune time for us to put forth an extra effort to extend the work throughout the Province, especially to those sections where the patriotic organizations formed for war work are looking for something of real worth to engage the attention and receive the support of the members. We are looking for a general response from the officers and members of the Institutes throughout the whole Province in extending the work. The programme of activities to be placed before you at this Convention should inspire confidence and create enthusiasm on your part.

The need for local organizations through which to deal with community problems and assist in national undertakings was never more urgent, so far as the rural districts are concerned. You have been chosen through public opinion as custodians of these undertakings which are of real worth to the nation. Why are we so anxious for you to flourish? Because you can make Canada a better place to live in—a happier place. No community which wishes to do the best by itself can afford to be without an organization which embraces all classes in the community, such as the Institutes do.

This is indeed an occasion for giving thanks for being able to again meet under normal conditions and to consider regular Institute work after the strenuous years of most praiseworthy patriotic effort on the part of the members of the Women's Institutes as well as other good women in both the cities, towns and rural districts of Ontario. Ontario responded nobly in men, material and the personal effort of those who could not serve at the front in seeing that munitions and hospital supplies were provided. The farmers of Ontario with shortage of labor and all the disabilities arising therefrom were able to produce larger quantities than ever of foodstuffs for export to the Motherland and our Allies.

There was no evidence, even in the last year of the war, of slackening in effort or lack of interest on the part of the Women's Institutes in their patriotic work, no evidence of weariness; but we could not conscientiously, at the conclusion of the war, urge the Institutes to at once take up regular Institute work aggressively. The excitement of the conflict made you forget that you were weary, but when the strife was over I can quite believe that you appreciated the necessity for a short rest before entering enthusiastically upon regular Institute work. We are now ready for a forward step.

Upon looking hurriedly over some of the excellent reports to be presented at this Convention, I was more than pleased to find that many of the Institutes have already *done* splendid work in the interests of both home and community, while others, I find, have planned excellent programmes. These reports will speak for themselves, and I shall confine my remarks on this occasion largely to a survey of what different Departments of the Government and various organizations have been able to give to the rural districts of the Province, because we have Women's Institutes through which to work; and also to emphasize what is probably of greater importance, namely, that which the Women's Institutes were able to do for themselves through local initiative and bringing to light and developing local efficiency and talent.

As Superintendent of the Institutes, I recognized from the first that if the organization was to be of permanent value, it must be of and for the people. We have heard a good deal through the press and on the platform about the Institutes being a Government controlled organization. Allow me on this occasion to repeat what I have said on previous occasions, that the only desire of the Department is to keep the Institutes free from partisan, political, sectarian, or controversial complications in order that all classes in every community may feel free to take part in the work of this most excellent organization. We have advised along the lines indicated but have not refused assistance to any locality or organization, even though those directing the activities of the local organization thought it well to introduce the discussion of questions which may be classed as above. You can readily understand that no Government would consent to having a meeting addressed by workers sent out by the Department devote the time in whole or in part to the discussion of debatable or political issues or any other feature which would tend to divide the membership. There is such a very wide field of activity in which the whole people are concerned that we can well afford for some time yet to adhere to the principles which have been our guide from the beginning.

The Institutes are not a one man or one woman or a one Department organization. As you will hear from Mrs. Alfred Watt, organizer of the Institutes in England, Scotland and Wales, and at our Toronto Convention from Judge Emily Murphy, President of the Dominion Federation, the Institutes have grown to very large proportions and hold a very important place in national development.

We in Ontario, as well as in other Provinces of the Dominion, are at a very critical period in the development of the work, and I am going to be bold enough to outline, and I may state that this outline was prepared before the elections of Monday, that in Ontario, if the work is to be developed along the most helpful lines, we should have our present organization supplemented and strengthened by the appointment of permanent employees of the Provincial Government to take charge of features of work as follows:—

1. *Health matters,* including Demonstration-Lecture Courses, in Home Nursing, Baby Clinics, Physical Development, etc.

2. *Food Problems*—Demonstration-Lecture Courses in Food Values and Cookery, Food Production, Canning of Fruits and Vegetables, etc.

3. *The Housing Problem,* including plans for new houses, remodelling houses, labor saving devices, methods of work, etc.

4. *Girls' work.* This is, as you know, a very broad field and is essential to permanency in the work.

5. *Business methods and programmes of work.* This would include parliamentary usages, keeping of records and accounts, financing, preparation of programmes, etc.

6. *Community undertakings,* such as libraries, community halls, civic improvement, care of cemeteries, assistance to hospitals, children's shelters, rest rooms, etc.

Each specialist would, of course, require to familiarize herself with the general programme of Institute work and plans so that she would be able to assist in organizing and stimulating a general interest in the Institutes.

There is an unlimited field of helpful activity for the rural districts in which the Institutes may co-operate most effectively. This includes *Agriculture*—Bee-keeping, Dairying, Fruit Growing, Gardening, etc.; *Education*—Services of special Lecturers, Travelling Libraries, Medical School Inspection, etc.; *Social Service*—The Social Service Council of Ontario, the Y.W.C.A., etc.; *Entertainment*—The furnishing of moving pictures of an educational and entertaining character, and arrangements with various organizations and educational bodies to furnish lecturers to the Institutes upon special terms.

We have emphasized with good effect the great importance of Medical Inspection, and while it is well that we should continue thorough physical examination and encourage the necessary treatment and care, I come to you to-day with a far more important message—that of *health* teaching rather than examination for defects.

It is stated by recognized authorities that six out of twenty-two million school children in the United States are in a seriously under-nourished condition, in need of not only proper feeding, but also medical care, if they are to be brought to full and vigorous maturity, and 75 per cent. of the twenty-two million are estimated below par. Much of this malnutrition exists in the rural sections of the United States. No doubt somewhat similar conditions exist in Canada. Let us as Institute members accept our responsibility in correcting these conditions and in preventing them, so far as possible.

Infant mortality has been reduced within a decade from 228 per thousand to 89 per thousand in the United States, this largely as a result of the education of the mothers in proper care and feeding of the child. With an aggressive educational campaign, malnutrition can be largely prevented. It is not only a humanitarian undertaking, but also an economic question for the nation. While health inspection is of great importance and has done much to awake an interest on the part of the public in general, the question of *health teaching* is of much greater importance. Health propaganda should mean something more than *information* on disease, it should deal with the problem of *preventing* disease.

The nations have been swept with the temperance sentiment, and everything points to a still more vigorous and, shall we say, a more important campaign in behalf of the proper care and feeding of the rising generation. Within a decade we shall see a revolution in the habits of living, and the Women's Institutes can be a large factor in the realization of such a condition.

That this question is to receive the intelligent consideration and support of our Governments, is evidenced in the legislation passed at the last session of the Dominion Parliament, providing for a Department of Health. Provision was made by legislation for the appointment of a Dominion Council of Health composed of the Deputy Minister of Health and the chief executive officer of the Department of Health of each Province, and five other persons. Two ladies were chosen as members of this Council, one of these being Mrs. William Todd, President of the Federated Women's Institutes of Ontario, and Vice-President of the Dominion Federation. The election of Mrs. Todd in her absence at the first meeting called, is an evidence of the value placed on the co-operation of the Institutes in health matters. I trust that we may have the hearty co-operation of the Institutes for a better physical development. You will hear more of this at the Toronto Convention.

The suggested Constitution for the Federated Women's Institutes of Ontario is being submitted to you for consideration at this Convention, and your recommendations as to changes or additions will be carried on to the London and Toronto Conventions. The three members of the Provincial Federation to be chosen at this Convention will join with members from other sections of the Province at the time of the Toronto Convention in appointing standing Committees on—Education and Better Schools, Health, Publicity, Home Economics, and Immigration.

Not only have we our Provincial Federation about complete and the Dominion Federation on a working basis, but plans are under way for an International Federation at the time of the Dominion wide Convention in Toronto.

There is no question at all in the minds of those acquainted with the developments in the work that there is a great need for such an organization, and the Women's Institutes are destined to be a very important factor in national development in the years to come. This organization is displaying a faculty for striking at the essentials with dispatch and doing effective and helpful work with a minimum of machinery and red tape.

The Institutes in general are well informed as to what the usual peace-time activities of the organization are. Most of you, I think, appreciate the fact that a programme cannot be outlined by officials of the Government, District Officers, or members of the Provincial Committee which will be acceptable to every locality. You must canvass the needs, possibilities and resources of each community in preparing your programme of activities. Local initiative and independence of action are a strong factor in making for success.

One of our workers, Miss Emily Guest, whom you all remember, has given us a message of real worth, and I have pleasure in passing it on to you.

A MESSAGE FROM THE MOTHERLAND TO THE WOMEN OF ONTARIO.

The message of the Motherland to the women of Ontario, as she enters the Peace Era, is one that expresses itself in feelings and in action more than in words.

The motives and mode of life that led to the culmination of August, 1914, are felt to be somehow, somewhere, wrong. But nearly one million young men of the Empire surrendered everything material for a great ideal—to insure freedom and justice for the weak equally with the strong.

Their blood is sacramental. They have made atonement for us. Our monument to them must be a new world order. We must reconstruct on a broader, kinder, juster basis. More thought must be given to the business of living, less to the business of money-making. Not only to love, but how to love our neighbor, must be made a real study, must be put into effective practice, not merely talked about.

"The care of men, children and food are what all good women have in common," says the Chief of Women's Institutes in Scotland. "Co-operation instead of competition must be the keynote of the new social order," says England.

Women have entered into full citizenship, have become joint guardians as well as mothers of the state. The spirit to create a new garden of life must arise. The blood of the boys has watered it.

PROVINCIAL AND DOMINION FEDERATIONS.

MRS. WM. TODD, ORILLIA, PRESIDENT ONTARIO FEDERATION.

The subject given to me is possibly the dullest thing that anyone can speak upon—Organization—and yet as I have listened to the addresses to-day and got a glimpse of the work waiting to be done, I feel the time is opportune to tighten up the organization within our Women's Institutes in order that better service may be rendered. That, and that only, is the object of organization. It took the great organized forces of all departments of the Empire and our Allies to win the war. The purpose of our organization is that we may better understand each other and our work and be in a better position to go forward with that work.

This is a great Province; we have all kinds of people living in it. It is largely agricultural, therefore our membership is largely rural, but we have the women in the small villages and the small towns, and a few city women, and this is an organization for all the people, for every woman of whatever locality, class, race, and creed in Ontario—an organization that is broad enough to take in every woman and make her feel that she has a contribution to offer to our work. That is the object of our Women's Institutes—to draw from every woman her contribution to our citizenship.

Better understanding was the primary thought that led to organization, that we would not have 900 branches, each branch launching out on its own work without any thought of the other branches, but that we might be all linked up. We thought we could be a greater force and have our work better developed if we worked together.

Then again, our Women's Institute work is not only of the 30,000 women in the various branches, but back of all that, we have our Department of Agriculture and all that it has to offer. For many, many years we in Ontario were wholly dependent upon our Department for initiative in the various lines of work that we have undertaken, but there came a time when it was realized by the Department, as it was realized by ourselves, that an organization of our forces which would bring in a great voluntary helping power to the Department, would be of benefit to us to make the work more effective.

I was glad when I heard the Superintendent's Report this afternoon that there were some things glimpsed for the future, that we may have different lines of workers, specialists, who will go out with these special demonstrations and special lines of education which we really need for our further development.

Then, if there are two or more branches in a particular district, they are organized into a District Institute, and sometimes we have that method reversed. In my own district, we had a District Institute first, and then it divided up into Branches. Occasionally we have a County Organization.

The organization of a Branch Institute may be undertaken at a regularly called meeting of the Women's Institute, or by a special meeting called by the Superintendent or by any five women of the District concerned.

Last February, we organized as The Federated Women's Institutes of Ontario, and in these nine months since organization, we have been busy, chiefly, in learning how to walk, going very slowly, putting forward a constitution, and studying the various questions that must come up in any great organization of this kind, and in this, we have had the very best help from our Department. That has been of inestimable value to us because, while we may think of things as limited to our own particular section, or perhaps two or three sections, we cannot have that broad vision of the whole Province that is held in our Department. We have been conscious always in dealing with the constitution and the various lines of work that we have thought of, that the vision of the Department stretched to the uttermost branch of the whole organization. There was no branch so poorly equipped, so faltering, so far away from the centres, that did not receive consideration. That is a valuable asset to any organization; if we are inclined to forget, we could not, because always there is the thought of that branch or district that is not so favored, in the mind of the Department, and though they may be small or far away, yet they are a part of this great organization of 30,000 women.

Immediately after our Provincial organization was formed, we had a gathering in Winnipeg with seven of our Provinces represented, and we formed a Dominion Federation of Women's Institutes.

Ontario has been the pioneer in this movement. Twenty-three years ago, the first Institute was organized in Ontario. They have spread throughout the whole of Canada, and these are in our Dominion Federation. They have spread, as you will hear from Mrs. Watt in a wonderful story, over the Old Land, spread to England, Wales, Scotland, over into Belgium, France and Russia. It was a surprise to me to learn a little while ago that in a southern Province of Russia they have a Women's Institute organization. All through the United States, there are organizations doing work somewhat similar to that of the Women's Institutes, an organization for every woman, as it has been put again and again, and we hope to keep it before you that it is an organization for every woman, whatever her other affiliations may be.

We look now to the next radical step—Imperial Federation. It is a beautiful thought that we will be linked up with all parts of our Empire in this great work at so near a time.

We are always so delighted to find leadership among the women themselves. We have had wonderful help from the women, and do you know it has surprised us and the people outside of our organization, to find the ability and the wonderful leadership that the women of the Institute have been capable of giving in the last few years.

To-day, the Women's Institutes Conventions draw the women of the city who are accustomed to great gatherings and club movements of all sorts, and they go away with the same testimony: "Why, that was a wonderful meeting. Why, the women can get right up and say things, and they were so to the point, and so full of life and vivid interest, and they hit the nail on the head every time; it is marvellous." We have had that testimony again and again from the women of the city. One expects a woman to be able to express her views when she has been through colleges, but the thing of special delight to me is that the women who are being schooled in our Institutes to-day are bringing the greatest contribution to this organization of Ontario Women's Institutes.

We have within the union all the practical women of affairs, the woman who has handled her own home affairs and handled them well, who has brought up a family and has set forth in her own community the principles that now she sets forth and helps us with in the organization. So we have all these different talents in this organization: the Department with its help, the talented, scholarly women with their help, and the women who are being trained right in the Institute branches by doing things: what a wonderful school that is!

Just as soon as any one of these parts of this organization overshadows or destroys any other part, then truly, the democratic spirit of our Women's Institutes movement would die. So we want to keep clearly before you all the various elements of the organization and the fact that we recognize the value of the ordinary workers in the Institute movement—the women who have come to realize by doing and working in the Branch Institute the force that is in them, the power that is theirs—and to help develop that power to the most of her ability. We want to recognize the coming into us of the great talented women of our Province, the women who have given service in other lines and who are able to give leadership to us.

In our work as an organization we must keep in mind all the various forces, and we must remember that we are not alone, not one individual branch, but a whole Empire banded together for the same great purpose.

You will be called upon during this Convention to deal with the constitution of our organization. It has been submitted to you, and you have read it. The same principle has been adopted by the Dominion and Provincial Federation, that this organization, being for all the people, must be non-sectarian and non-partisan. Nothing less than that will be big enough for Canada.

The test of any organization is not the difficulties that are facing it at any time, but it is the way in which it will meet these difficulties. I love our Institute Ode. It pledges us to the very highest, the spirit of service, no small, mean thing, no malice nor unkindness shall enter into our work as Women's Institute members, but we shall work for the common weal, the common good, and that is the biggest thing we can unite upon.

We to-day in Canada know what it is to be a soldier; it is not marching behind the band; it is serving; it is doing the hard thing and doing it nobly and unselfishly. And so in the Institute work, while there are difficulties that face us, we are sure that we are not satisfied to march behind the band; we are satisfied only when we can serve the common weal.

A constitution in order to be really good has to be simple to start with, and yet it must leave room for growth. A constitution should not be changed easily or often. It is a thing that should remain steady, and we have tried in this constitution that is submitted to you to be distinctly simple and yet give an opportunity for growth as the organization develops. The constitution must grow with the needs of the organization.

We share responsibility in this. Just as soon as we use the word share, we are talking of the community spirit, and to-day if there is one thing we need it is the development of the community spirit. In all that has been said to-day, there has been that thought, the need of coming together as a community; the need of our boys and girls coming together; some place where they can have the educational and social advantages that have been somewhat lacking in days gone by.

In the constitution that is submitted and the constitution of the Dominion Federation, for they are similar, we laid down the principle of equal representation, not representation according to membership, but equal representation. Each Province has two representatives, and that is valuable because each Province represents just a certain part of our Dominion. And those two representatives are supposed to be loaded up with all the various things that pertain to their Province. They are supposed to have power to speak for their Province in the Dominion Federation. So in our convention here, every Branch has its representative, and every district has a special representative.

I think of our Federation movement as being a good deal like the Confederation of this great Dominion. When it was found that the various Provinces had so many difficulties, difficulties not understood by the other Provinces, the statesmen of those days thought we should come into a closer unity as Provinces, that we should lay a foundation for national life. They met in the City of Quebec, and for six or seven weeks, they threshed out the question of federation: "How can we unite?" Here was a Province bounded by the sea; these people knew nothing of the problems of the Province that was strictly agricultural or strictly inland. There was a Province whose whole industry was in its forests; here was one where the fisheries had to be developed—all the problems of the different Provinces had to be dealt with, and yet through all those weeks there was just one purpose, and that purpose was to come together and make a great and glorious nation out of the several scattered Provinces. You know how wonderfully they did that work. When I think of federation of the Institutes, I always think of that gathering in Quebec, and what it has meant to the Dominion of Canada. To my mind this movement, whereby the women from the various Provincial organizations come together as a Dominion Federation, is pre-figured for us by that gathering that we know to-day as the Fathers of Confederation, whose pictures hang in our Legislative halls, and who are honored in Canada because of their work in bringing the Provinces together. I have the greatest possible hope that some day we shall look back to this Dominion federation movement and feel that we were really Mothers of Confederation. And if our pictures are not hung upon Legislative halls, we may have the verdict of those who come after, that we did a great work for Canada.

ADDRESS.

Mrs. M. G. Hobbs, of England.

I am very much interested to see that you in this country, where conditions are so different from ours, are dealing more or less with some of the problems which are similar. But there is this difference: you are building up a rural civilization, a national civilization; we are trying to rebuild, out of the ruins of that European civilization which is the mother of us all, something in it which has received such a death blow that it may never recover, and it may be left to you and to the other younger nations to carry on that great inheritance. However that may be, we are striving now to re-make what has been called by perhaps the greatest of our rural men, George Russell, of Ireland, a rural civilization, and we have found one of the greatest agencies in that work is this Women's Institute movement.

We realized at the beginning of the war that the rural parts of England were absolutely unorganized. We could not turn on the tap of any kind of work which was needed to be done, because there was no organization to take it up. Now we had what I considered one of our supreme pieces of good luck—we had with us one of your country women, Mrs. Alfred Watt. She did not come there to organize the Institutes; we would not have stood that, but she was there; she was one of us, and she came forth to help us, and to show us how to fill in that great need. She was able to do that because of her experience in working out similar problems in this country, and she helped us to work out our problems, and I feel with all the other things we owe to you in the support which your country gave to us both in men and women during the war, of all these things, nothing did you give that has more promise in the future in it than giving us the help of Mrs. Watt.

Our Institutes were bound to be concentrated at first on the material side. We needed food desperately; we needed to produce food, to conserve food, and certainly of the latter science we did not know very much, but at the same time, even in that time of stress when everyone was working up to the top-notch, we needed something else—we needed some kind of recreation, something to take our minds away from the war, something to make the women in those remote villages in England, left lonely as they were, forget what was going on at so short a distance away. Therefore, from the very first in our Women's Institute movement we developed very largely the social side. I am glad to see that you, too, are developing that.

What arts did we try to develop in the simple gatherings of ours? We knew, because they have been collected for many years by devoted men and women in England, that we possessed one of the greatest inheritances in our native art of folk song and folk dances. Time was when the English were known as the greatest singers and dancers of the continent of Europe. We had forgotten that. We had taken to the bad habit of admiring what other nations did, so we utilized these folk songs and these simple country dances in our Institutes, and by giving the people of our country something that was good art, and something which was their very own, we felt we were not only giving them something that would help them over this time of trouble, but something that was part of the nation for all time, a real national art of music. We felt we were giving them also a valuable educational asset.

We teach the English language in order that we may be able to give expression to what we think, but there are many things—feelings, ambitions, aspirations of the soul—that are inexpressible in language, and yet we are able to express these things in music, in singing and also in dancing, which is really an art. Our Department of Education realizing this, fell in with the idea, so much so that it is compulsory in the training colleges for teachers throughout England to learn folk songs and folk dances, and these are taught in the schools.

It might interest you to hear about one of the Women's Institute schools, many of which Mrs. Watt arranged and carried out while she was in England. These schools were run under the auspices of our Board of Agriculture, and they were held for the express purpose of training women for the Institutes of England and Wales, who should go out in their own districts and organize other Institutes. This particular school was held at one of our well known Agricultural Colleges at Wye, Kent. We had singing and dancing and little talks about the meaning of the songs, and where they came from and how they could be utilized in Institute work to attract the young people and give them some wholesome recreation, so that the Wye School, I think we might say, was really a glorified Women's Institute.

We realize in our country that agriculture and rural life have two aspects, interdependent, both essential. The one, the basis of everything, is the economic aspect. Man must have a fitting return for his money and his labor. The other is the social aspect. Men and women must have an opportunity for education, for social intercourse and for the development that comes from mixing with one's fellows.

We are in the same position as you are with regard to our returned soldiers, only I am ashamed to say from what I heard this morning and what I heard from Dr. Creelman, we are not attacking it in the business-like way that you are. Perhaps our difficulty is we have not so much land. But we feel that the man who was on the land before the war, and the other men, whom we hope to attract to the land in one way or another, are not going to go back into the English village as it was. We feel we must have better houses, better education, and also we must have better opportunities for recreation, and that we hope will be enormously helped by the Women's Institute movement.

I quoted George Russell before, I wish to quote him again. He says, when asked, "What shall we do, we people of the country, what dream shall we dream or what labor shall we undertake?" "I say to you, you must work to break up evil and petty isolation of man from man." That is what we are trying to do, and we hope you will join in the Canadian Women's Institutes, and I hope in Australia and New Zealand and South Africa and every part of this great Empire that we will be doing that, and not only breaking up the isolation of man from man in our own country, but what is just as bad, the isolation of man from man in different countries.

Mrs. Hobbs followed her address with a very charming English folk song.

The meeting adjourned to take afternoon tea in the Presbyterian Church tendered by the Local Council of Women.

At six p.m. the Halycon Club, composed of Civil Servants, entertained the delegates at supper in their charming club rooms, which they put at the disposal of the delegates at any time during the convention.

Miss Walker, President of the Club, and Mayor Fisher, of Ottawa, welcomed the guests in short addresses.

Mrs. Jas. Reid, Renfrew, responded fittingly, after which Sir Henry Drayton, Minister of Finance, in a brief speech praised the war work of the Women's Institute and asked continued co-operation in the great national problems of production and finance.

REPORTS OF GIRLS' INSTITUTES.

"JANEY CANUCK" GIRLS' INSTITUTE.

MISS A. LILLIAN JAMES, ALMONTE.

The "Janey Canuck" Branch of the Women's Institute was formed on the 11th of July, 1918, so you see we have had a very short but eventful life history. Let me tell you why we were anxious to form such a society. In our community we had no central Red Cross organization, and it was not difficult to see how indifferent both the young girls and older people were towards Red Cross work. We believed that a society was necessary to get the young girls together, and, after they had been gotten, something to hold them there. We were too far away to attend the Institute in Clayton, and most of the girls were too young to be interested in meetings conducted by women. So when Mrs. Kelly, of Almonte, suggested that we form a Girls' Institute right at home, all by ourselves, we were delighted. We had the organization meeting on the 11th of July with fifteen girls present, and nine of these joined. That same evening we had a meeting to arrange with the young men of the community to hold a social in aid of the Rosamond Memorial Hospital. We cleared two hundred dollars at that social, which made a good start for the Institute. We decided to do Red Cross work entirely at our monthly meetings for the duration of the war, and to get the work from the Almonte Branch until we should become financially strong enough to be self-supporting. Stretcher caps were sent up, and at the next three meetings we made five dozen of them and six dozen face towels. In December the girls of the Institute and the young men of the community put on a play at Union Hall. From this we raised fifty dollars. Twenty-five of this went to the Canadian Red Cross; the rest bought six good prints for School S.S. No. 12, Lanark. These prints have been framed, and are a vast improvement to the gaudy calendars that had been there for years.

At every meeting so far we had new members join, but in December and January the influenza came into our country. Our meetings had been held from house to house, so we had to close, and no meetings were held till June. Our President died of that disease, so I suppose it was partly because we were without a leader that it was so hard to start up again. Mrs. Kelly came back; she told us how we could make an interesting year, and we reorganized. In June came our District Convention. Six of our girls attended, and were the only young girls but one in the Town Hall of Almonte all that day. They enjoyed every minute, and we came back with new ideas and a determination to make good.

Our July meeting was the most interesting one we have had. We decided to do hospital work, plain sewing that the youngest girls could do. So we bought flannelette and towelling, and made up roller and dish towels for the Almonte Hospital. We have a "cent a week" fund also for the hospital, and most of the members of the Institute are members of that. This is managed by a secretary, who sees that the money reaches the hospital authorities safely, and the Institute secretary is not troubled with it. Five dollars was sent to the District Representative of Agriculture for the prize list of the Rural School Fall Fair. We offered it to the boy or girl scoring the highest number of points in athletics. That, we believed, would help the individual. It would bring forth an interest in sports. Many of our girls attended the fair. We had tried to get the children interested in these school fairs, and the five dollars helped marvellously. One young boy who had taken six first prizes—for bread, cakes, pies and several other things—told us he was with the school fair to the end. We assured him we were too. So our young people are waking up and are taking advantage of everything offered and provided by our Government.

Then there is the problem of the Rural School. We visit our schools regularly. Sometimes we go to their Literary Societies, sometimes just call and see the teachers. We think that if women were to take an interest in the public schools, not only in our back country districts but in our towns and cities, that conditions there would change, especially the sanitation. The Institute is trying to do what it can to make our schools clean, safe and proper places for our children. We believed that the girls were not having enough fun, so an Institute Basket Ball Club was organized. A fee of twenty-five cents was charged, a secretary appointed to look after the same and place it in the Institute treasury. We had many games with outside teams. Our baseball team had been playing all over the country for Red Cross purposes during the war. They asked us to help at a social for their funds. One hundred and eighty-five dollars was raised and twenty-five was given to the Institute. This was man's idea of being generous, considering the fact that we did the work; but we were very thankful for it.

In August, the District President visited us and was surprised to see so many intelligent girls. Her address was very interesting. We had another paper that day on the Referendum, but three girls only were old enough to vote. September we gave a party in Union Hall. Our share amounted to twenty-five dollars. This was set aside to put roofing on Union Hall.

New members joined from Union Hall locality, and asked that instead of having our Literary Society in S.S. No. 12 this fall and theirs in No. 3 that we combine and have Union meetings to be called the Union Literary Society. So we did. We have both the old and the young at these meetings. One old man said that he was only at one Literary meeting in his life before, but hoped never to miss another. The fee, fifty cents for the season, and the money raised, go to fix up the hall into a Community Hall. We had heard so much about the Government helping, but we decided that before we should have the money raised all our young people (and we have a great many) would have grown up or gone out of the county. Now was the time we needed such a place. New roofing has been bought and put on. At these meetings we have essays, discussions, debates, music, contests, games. No dancing or card playing is allowed because we want *everybody* to come and *everybody* to be satisfied and happy. Each night we have the reading of the paper the "Literary Review." Contributions come in from all the members, and it is usually an interesting item on the programme. Everybody is given a chance to display her talent in writing editorials, poems and humor. One evening a month we study Shakespeare, and are going to get in touch with the Shakespeare Club of Carleton Place. Our meetings are always properly chaperoned and close at 10.30.

So we have a very big work ahead of us to fix up this hall into a proper place for all our meetings and community affairs. Next year we expect to have a sporting club with baseball for the boys, basket ball for girls, and tennis for all. We want to keep our young people young, so we have no age limit in our Institute.

Girls and boys on farms don't have enough fun. It is our duty to keep them stirred up and keep them young. We believe that if we can keep our young people on the farms happy; if we can give them a better time in our Community Hall than they can have wandering our city streets that we shall have worked wonders. The greatest asset of any nation is the character of its people. There is no nation greater than the soul of the individual. The women of Canada are now given the right to say how these characters may be made into the very best citizens in the world.

Our summer sessions are the best because many of our members are either school girls or students and are at home. But the winter months we expect to do hospital work. turn our attention to the schools and give entertainments to help out our steadily decreasing finances.

In all we have nineteen members; every available girl within a radius of about six miles, so our Society cannot grow. We can't go out to them. they must come into us. All our girls are workers. We have to help with everything that comes along in the county or we couldn't ever get anywhere. The girls are interested in so many different things that it is hard for me to explain all to you. We firmly believe that when we have been going for fifteen or twenty years that we will have something really interesting to talk about.

Of our three girls who had the franchise two were poll clerks and one a scrutineer for the Referendum. It was amusing to watch the expressions of people who came in to vote. The girls smiled and were quite at home, the men gasped and stared and gasped again, but they will become used to all things in time.

Next year, our Institute hopes to know how to give a report and have something better to give. This year's work has been somewhat chaotic, but taking everything into consideration we have at least touched on a great many different lines of work. It has been a good thing for the community. All our workers I know are proud to have done their very little bit to win the war; they are proud to belong to the greatest body of women in the whole world and to be the first Girls' Institute in Eastern Ontario.

LANARK JUNIOR INSTITUTE.

Last October, some of the members of the Women's Institute called together a group of girls to find out their views as to the advisability of organizing a Junior Branch of their Institute. The proposal was enthusiastically received, and that afternoon the Lanark Junior Institute was organized.

We have never since regretted that step, and every member of our Society is grateful to the Women's Institute for their interest and helpfulness as regards our organization. Towards that Institute we feel much as Canada does towards the Mother Country.

As an Institute we have formulated and adopted a set of ten commandments, which we call the Girls' Creed.

Girls' Creed on Active Service.

1. Remember the Golden Rule, to keep it wholly.
2. Thou shalt not make excuses for thine own faults and failings.
3. Thou shalt have thy "good time" by giving it to some one else.
4. Thou shalt cultivate the habit of punctuality with all thy heart.
5. Honor the English language, and refrain from slang and "ragtime" in thy conversation.

6. Thou shalt not be a thistle in the home-garden; be a rose.
7. Thou shalt accustom thyself always to accuracy of statement as a principle of honor.
8. Thou shalt not be "small," mean or anything but strictly honest in thy smallest dealing.
9. Thou shalt make it a habit to go early to bed.
10. Thou shalt not put off until later what should be done immediately.

As to the practical side of our work, though we have been organized so short a time, we have undertaken to follow the Institute motto, "For Home and Country," by helping the Civic Improvement League in the same way as the Women's Institute. At our January meeting, we pledged $100 to be used for reconstructing the stage of the Lanark Town Hall. The curtain in that hall is witness to our achievement. Fifty dollars of the required amount has already been raised.

In February we held a Carnival in the skating rink, which was a decided success, and which gave us our first experience along this line. From it we netted approximately thirty-five dollars. Our next venture was a Masquerade, held in the Red Cross Rooms on May 26th. This took the form of a merry evening of contests, guessing games, and fun. This time, twenty-five dollars was the result of our work. The next money-making venture, and for which we are planning now, is to be a play presented by members of the Lanark Junior Institute, and which we hope will prove as much a success as formerly.

Our financial statement is as follows:

Net receipts from Carnival	$31 00
Membership Fees	5 25
Proceeds from Masquerade	26 35
Total Receipts	$62 60
Total Expenditure	28 08
Balance on hand	44 52

We hope soon to raise the remaining part of our promised one hundred dollars, and we have many plans for the future. We have had altogether nine meetings and our membership, which, at present, is twenty-one, is steadily increasing. Already our Institute has been of great benefit to us in many ways. We have a knowledge of Parliamentary Law, and an ability for organization and executive work which otherwise we should never have had an opportunity of developing. We are also learning to work together for others and finding out the true meaning of the word "service."

However, in everything we look to the Senior Institute for counsel and advice, and are heartily thankful to them for the many ways in which they have helped us. Knowing as we do, how great a help a Junior organization of this kind can be to the young people, we sincerely hope that many others will be formed in the near future.

LANSDOWNE JUNIOR INSTITUTE.

We have not prepared a report, but the Institute was organized in January, 1919. and we have had eight regular meetings. The meetings, which take a social and literary form, are held the last Friday of each month. We have one paper and a musical selection, and a social event after. We held a concert when we first organized to make some money and we did very well. We have not had time to do much work yet, but we have planned to help the Soldier Settlement Board and to do hospital work.

DELTA JUNIOR INSTITUTE.

We have been working with the Senior Branch in concerts and everything, and we divide the proceeds equally; we make all our money in that way together. We have $200 in the bank at present. We have helped the Navy League and the Sick Children's Hospital in Toronto, the latter by sewing for them. We have not decided just what we will do during this winter, but I think it will be helping the Soldiers' Settlement work. Our meetings are mostly social and literary.

Q.—Have you printed programmes?

A.—No; we just advertise the meeting, but of course it is always held the first and third Thursday.

Miss Sutherland: These Institutes seem to value very much the wider experience of the older members; that goes a long way in carrying on the work of a Junior Institute. You need some person who has had some experience in the Senior Institute, not to take charge of the meetings, but to be a guide and inspiration to these girls who are undertaking the work for themselves. That would lead to the thought, is it advisable in our smaller localities to have a separate Junior Institute?

Member From Lanark: We have a Junior Institute, and I do not think it would be at all wise to have it connected with the Senior Institute, because there are girls in it from thirteen to sixteen years of age, and you cannot expect them to enjoy subjects that the older members would enjoy, and I do not think they would want to belong to the Senior Institute. We have a population of a little over 700.

Member From Delta: We have two Institutes at Delta which is a very small place, and they are held on separate days. There are about twenty girls in the Junior Institute. We have been doing Red Cross work for the last three or four years, and we have done work for the Women's Hospital. The girls do not prepare papers or anything like that, but we have undertaken to study the laws of Ontario. One girl reads a chapter, and then we take that up for discussion.

Mrs. Watt: I think I have not heard anything since I left England that appeals to me as much as these reports. The future life of the young citizens in these communities ought to make any Canadian's heart simply thrill with pride. I feel that the future of the race is assured when we have such boys and girls as that in our Canadian towns. If possible, I would like that the Junior Branches here should be linked up with the Girl's Institutes in England. They would learn a great deal in that spirit of civic and community work, and perhaps the girls here would learn something of the pageants and handicrafts that the girls there are learning. Please do let me give my personal congratulations to these splendid reports.

MISS SUTHERLAND: Mrs. Watt will leave addresses of the Girls' Institutes in England with our office, and we will be able to get that information to all the Junior Institutes. We have four in Eastern Ontario: Delta, Lansdowne, "Janey Canuck," and Lanark.

GIRLS' WORK.

MISS CHAPMAN, ASSOCIATE EDITOR OF THE *Farmers' Magazine*, TORONTO.

This convention has really been an inspiration all through. I never was at the Ottawa Convention before, and I never was at a convention where such a spirit was carried through all the sessions.

There is very little I can tell about girls' work after what you have heard to-day. But there are some things that have been brought out that are worth emphasizing. The idea of having a boys' club meet with the girls' club is a very fine thing, and I believe it is one of the secrets of the success and staying power of the Girls' Institute. Some one in the community ought to look after them; the women and mothers and chaplains in the neighborhood ought to keep a guiding and a sympathetic eye on them, because if they are not going to try to do something to get the boys and girls working together in the right kind of gatherings, who else will do it? You notice the girls said their meetings closed at 10.30. Is not that a splendid thing?

Another reason why these girls' organizations are such a remarkably fine thing, is that people outside of the girls themselves like to give out a line of conduct that they like the girls to do; but when you get a bunch of girls having a creed like that of the Lanark Junior Institute, they will live up to it far better because they made it themselves and because they are self-governing.

I had an opportunity of being in a Girls' Institute recently where one girl recited in a most charming way, that poem:

"Little girl, you look so small;
Don't you wear no clothes at all?"

She was refined, and what she said made quite an impression there. The girls were doing that for themselves; no one had to tell them. I won't tell you anything more about the girls' work, as I want to listen, and I would like to have just as full information about it as I can get. These ideas are pretty new throughout the Province, and we ought to try to spread them.

THE STREETSVILLE CANNING TEAM.

MISS K. I. MCINTOSH, BRAMPTON.

Last year we had five canning teams competing, that is, we had five Junior Institutes in Peel County, and from each of these Institutes four girls were chosen. There are only three girls here to-day, the fourth girl, the captain of the team, is married and living in Winnipeg. Four girls were chosen from each team, and trained for eight weeks preceding the County Fair. Each was given a different place, tried out in a different way in each team, and then we chose the work which each girl was to take—the captain and the three assistants. Throughout the course of training, they carried on the canning of home products, and also at our weekly meetings. At each meeting we tried to introduce some new feature in connection with canning or preserving. The canning of vegetables was a feature last year, and the girls at the Fair gave an exhibit of fifteen jars. The girls have a dozen jars of fruit and vegetables which they exhibited, here to-day. Prizes were offered, and last year the first prize was a trip to Ottawa at the time of the Women's Institute Convention. The Convention was postponed last year and the Department was good enough to give us a place this year. The first prize was won by the Streetsville team and the second prize by Caledon. The second prize is a trip to the London Convention. In addition to the first and second prizes, the twenty girls were given a little souvenir pin.

The girls were allowed to meet as often as they could, aside from their regular lessons. This year they exhibited canned fruit and vegetables, meats, jellies and pickles. The first prize this year was a two-compartment steam cooker to each girl on the team, and the second prize, a Boston Cook Book to each girl, with the souvenir pin to each girl competing. Throughout we tried to give the idea of the joy of doing things and of doing them well.

Mr. Putnam: It is wonderful to think of one-ninth of the Institutes of Ontario being able to hold a convention such as you have. It is just the right size to do effective work, and you get to know each other a little better than at the Central Convention in Toronto. Now, I would like very much to see you consolidate your forces, as it were, and I have a suggestion to make along that line for consideration and action, if you will, this afternoon. I have drafted a resolution here which I think might cover the purpose:

"Resolved, that we the delegates from Women's Institutes in Annual Convention for Eastern Ontario shall select three representatives, one from each subdivision, to co-operate with the three members of the Board of Directors of the Provincial Federation and two persons named by the Carleton County Institutes, as a Board of Directors for the Eastern Ontario Division of Ontario Women's Institutes. This Board shall elect from among themselves a Chairman and Vice-Chairman and, from among themselves or otherwise, a Secretary. Their duties shall be to name the necessary committees for convention purposes, and such other activities as they may determine, and to advise with the Department of Agriculture as to work to be undertaken and methods adopted."

The Institute work has come to be a very large and important undertaking, and we in the Department feel the need for the Institutes accepting greater responsibility in planning for the conventions. We will of course co-operate as we have in the past.

About seventy-five of the Normal students of Ottawa came to the meeting at this point to hear the address which follows.

THE HOT SCHOOL LUNCH.

Albert H. Leake, Toronto, Director of Household Science in Rural Schools.

After complimenting the delegates on the great value of their work and the power of their influence, Mr. Leake said, Women should use their influence. A nation can never rise higher than its women. If we educate a boy, we educate an individual; if we educate a girl, we educate a whole family.

One of the outstanding problems is the rural school education generally, and the most outstanding problem in educational circles is the condition of the rural school. It is a human characteristic that we are inclined to concern ourselves with the big and the spectacular, and neglect the little things. We forget, sometimes, that a combination of little things is very much more influencing than tackling one big thing. For that reason, we have neglected to some extent our rural schools, but something that happened quite recently goes to show that that tendency is going to be redressed. You know "trifles make perfection and after all, perfection is no trifle."

I wonder whether we know what influence our rural schools have on the Province. We have in this Province 5,086 rural schools—one-room schools. We have 890 of that number with an average attendance of ten or less, and 45% of the children of this Province are in attendance in the rural schools.

From these figures you will easily see how important the question of rural education is. I do not want to criticize our rural schools nor any of our schools for that matter, but the spirit of criticism is in the air; it is quite a popular pastime to criticize things, and our rural schools come in for a good deal of that criticism, and most of it never hits the mark at all. Any sort of marksman can hit a barn, and a good deal of our criticism reminds me of the steamboat of Abraham Lincoln's that sailed up and down the Mississippi. It is said this steamboat had a seven inch whistle and a five inch boiler; every time the whistle blew, the engine stopped,—something like the criticism we get thrown at our rural schools. It is not even necessary to make a direct accusation against the rural schools. You can sometimes insinuate just as strongly as you can accuse, like the lady who called to her maid, "Mary, come and take the parrot downstairs, the master has lost his collar stud."

The system we have, in spite of certain defects, which are a certainty in all human endeavors, has made progress. You know conditions do change, and the criticism we give to our rural schools ought to be tempered by the admission that they have done a remarkable work, that they have done such a work as no other agency could possibly have done. We need criticism, but that criticism ought to be sympathetic and constructive, and the more of that criticism we get, the better we shall all be pleased.

What was good enough for our fathers is not good enough for us. Progress demands new equipment and new machinery. A manufacturer to-day does not hesitate to scrap his machinery. The farmer pulls down his barns and builds greater ones, and why should we not apply the same principles to our school organization? A mummy has a good excuse for placid indifference; you can excuse him for failing to adapt himself to changing conditions, because he has been dead for six thousand years, but no individual whose blood still circulates, whose brain cells are still on the job, can be excused for not investigating these newer things that we are trying to install into rural schools. There is no alibi for any man or woman who fails at least to investigate the workings of the newer features being introduced into the rural schools, to see just what they do in giving a broad education for the many activities of life and in establishing a co-operative spirit throughout the whole neighborhood.

First of all you can develop the educational sentiment. We get on the platform and talk about education, but when we are asked to dig down in our pockets for it, we begin to howl. I doubt whether we have a strong sentiment for education in this Province. A newspaper is a pretty good indication of the popular sentiment. You find half a page advertising cigarettes; another half page devoted to chewing gum; another page to calamities, but not a single line devoted to the little red schoolhouse and the humble country school teacher, and yet, after all, they have more influence. It is the business of our women; you have privileges, rights and responsibilities; your rights and privileges entail responsibilities; you cannot blame the men any longer when things are wrong; it is up to you to see what you can do. We want to develop this educational sentiment, and our schools want developing first of all along the line of health.

Health is the nation's chief asset to-day, and we are to some extent ignoring it. You know the United States draft disclosed the fact, that the defectives from rural districts were from seven to twenty per cent. higher than from towns and cities. In the United States every year there are born 2,500,000 babies; 350,000 of these or 14% of them die before they are one year old. Do you know that of our men who presented themselves for military service 50% were rejected as medically unfit. Remembering all these things, surely it is necessary that we should pay more attention to health. Ill health is a crime, due to somebody away back in the ages past, our great-great-grandfather or grandmother, and if we want to improve our race, we have to start right now. You cannot raise an A 1 Empire with C 3 men, and we have to get A 1 men and women, and it is in the schools this has to be done.

A good many of the physical defects of school children are due to malnutrition. That does not mean not eating enough. It is because children do not digest their food properly and because they eat food of the wrong kind, and, a good many of our medical experts say, because of the conditions under which the ordinary school lunch is eaten. We have the health of this nation in charge for posterity, and while it is in our charge we ought to do everything we can to hand it down unimpaired.

Owing to the distance from the ordinary school, the children have to travel a long way, and they have to get up early, and if children are like what I was they wait until the last minute to get up, snatch a hurried breakfast, and rush off to school with their lunch boxes. Then at noon, they are allowed to eat it when and how they please. In the winter time the lunch is sometimes frozen. In the summer time they open up their lunch boxes without washing their hands, scamper around the yard, sit on the steps, and with a sandwich in one hand and a piece of cake in another, they eat their lunch, and get over it in five minutes in order to have the other fifty-five minutes for mischief. I saw a teacher with a sandwich in one hand and writing work on the blackboard during the noon hour. Very often the lunch fails to attract; it is packed in a tin box with a newspaper around it, and sometimes it tastes of tin and is flavored with printer's ink.

Physical defects produced by malnutrition hinder mental growth as well as physical development, and so it becomes just as much an educational problem as a physical problem.

I went into a rural school not so long ago, about ten minutes to nine in the morning; the school was about ten miles from everywhere. While in the yard, I met two boys carrying buckets of water into the school. I went into the school and saw two girls paring potatoes. I asked them what they were doing, and they said, "Making potato soup." I sat and watched what was going on. These girls continued their preparations until nine o'clock, and I did not see any more of this until about eleven, when they went out at recess. I saw the teacher and these two girls and the two boys go up to a corner of the room and open two cupboard drawers. They took from there a two-flame burner oil stove; they placed on this the material they had prepared, lighted the stove and the school went on from eleven to twelve just as usual except that these two girls about two or three times during the hour went up to the stove to see that things were going on all right. Fifteen minutes to twelve the whole school stopped. Every boy and girl in that school, twenty-five or twenty-six of them, washed their hands and faces, smoothed their hair, got their lunch boxes, and sat down at their desks. This school had not a table. They opened their lunch boxes and took out a serviette; some had linen napkins, some paper serviettes and still others pieces of white oil cloth. They took out the contents of their lunch boxes and arranged it; at a signal they walked up to the front and every boy and girl had a bowl of hot, nourishing soup; they brought it back to their desks and sat down and ate their lunches in an orderly manner. They talked and joked in a restrained sort of way, but before they ate their lunch, the eldest girl said grace, and they behaved just as they would at home, and maybe better. They developed a sort of home spirit in that school. They packed in their boxes what they had left, walked up to the front and soaked their basins and spoons and walked out, leaving two boys and two girls to wash up. In this work they are getting the boys to help as well as the girls. No matter how important and how influential you women are, you cannot make a home without a man. And for that reason we want to train our boys to take their fair share of the responsibilities of the home and the home life. This Province and this Dominion is not going to be what it ought to be and what it can be and what it must be unless we get our boys educated to the idea that they must take their part in the making of a home.

I get letters from teachers all over telling me how the boys are enjoying this work. Compare these two conditions: the ordinary way of eating a school lunch and the condition I have just described. That is not only in one school of this Province, but we have over 100 doing it—very largely through the influence of the Women's Institutes.

The time will soon come when the noon hour in every public school throughout this Province will be supervised—when the children will not be left alone to play hob. I have been in rural schools were conditions existed such as you would not believe, and it is not right that our boys and girls should be left to play here, there and everywhere unsupervised at the noon hour, and the teacher go home to a hot lunch. A recent investigation showed that half of the childish delinquency, half of the moral and physical defects and other things inherent in childhood got a start in that unsupervised noon hour, and the time is rapidly coming when we will have to take steps to prevent that sort of thing. Prevention is better than cure a good deal.

We seem to be going on the principle of that community which was built on the side of a cliff. People were always falling over, and they held a meeting to decide whether they would build a fence around the top of the cliff or a hospital at the foot. We are building hospitals at the foot and forgetting the fence around the top. It is time we changed our plan.

What are the advantages of this hot lunch? First of all we get better work in the afternoon; it adds interest to school work. Children are more ready to attend school in bad weather. It gives better balance to the meal, it aids digestion, improves the health and gives some sort of practical training; it teaches cleanliness and encourages table manners. These advantages are not mere book talk. I have testimonials from teachers and inspectors throughout this whole Province. Every child has a right to education, the best education, at the public expense that we can give him as a matter of state policy, and every rural child has a right to as good an education as a town child. But has the rural child got it? It is up to you to see that he does get it. Every boy should be taught manual training in the country schools, and every girl should be taught household science. Our boys now marry girls like magazine covers and expect them to work like cook books.

When I am advocating these school lunches, I am always met with the objection that it cannot be done. The man or woman who says things cannot be done is always interrupted by somebody getting up and doing them. We have 100 schools doing it. We are surrounding ourselves with self-created limitations; we think because things have not been done, they cannot be done, but we are altogether wrong.

What dishes are we serving in this rural school lunch? Let me give you a list: Toast and cocoa; mashed potatoes and cocoa; tomato soup; bean soup; potato soup; sliced potatoes in white sauce; baked potatoes, etc. Every one of these dishes has been served in a country school for the noon lunch to supplement the box lunch brought by the children from home.

We have had a letter from every one of the 100 schools, and we have not had one advancing any unfavorable criticism; some teachers raise difficulties but they are easily solved.

Q. Where are these schools?

A. They are scattered all over the Province, but Wentworth has more than any other county.

The teacher is a most important consideration in the rural schools, and any school for that matter. I am exceedingly glad to see the Normal School students here to-day, because it seems to me to mark an epoch in our rural school life, the beginning of a union between education and rural life which can be strongly developed through the co-operation of the teacher and the woman.

Some of our district schools in this Province have been closed because satisfactory boarding houses could not be found for the teacher. Are our teachers held in the respect and dignity and consideration that they should be? We find our newspapers referring to the "school marm." There is a sort of utter contempt attached to it, just as we used to call the domestic helper, the "slavey."

The other day, in one of the American papers, I saw an item where a baseball player signed a contract for three years at $9,000 a year. Charlie Chaplin makes a fool of himself for $100,000 a year. In a paper the other day there was an advertisement for a teacher at $65 a month; underneath that there was an advertisement for a colored barber at $30 a week. Just think about it? Think of the contrast! Teacher, $45 a month; cook general, $45 a month, plus board and lodging. So long as we continue to pay our chauffeurs and policemen and our barbers more than we do our teachers, so long as we continue to pay more attention to the outside of our heads than the inside, the outside work will be better done than the inside work, and you may as well make up your minds to it.

We have rewarded our teachers with a laurel wreath of praise. I take second position to no man in thinking of the dignity and nobility of the teaching profession, but we have had enough of that sort of thing. Until the popular estimate of nobility and sacrifice and work is shown in a tangible way, you cannot live on laurel wreaths. I am saying this for the sake of the schools. When the teachers are paid an adequate salary then you can expect great service; if you do not get it, fire them and get somebody to give you the service. We do not want suit-case teachers in the country districts. She takes her grip to school on Friday afternoon, and as soon as four o'clock comes she rushes off and catches the first train and she shakes the dust of the district off her feet until Monday morning. A teacher like that cannot do good work in the district where she ought to be a community leader, and you must make conditions possible for her to act as community leader; it does not all depend on the teacher.

If a teacher does not want to take up this household science work she can kill it in fifty seconds. She can shrug her shoulders, turn up her nose, and the work is done. The boys and girls can see through the teachers in ninety-nine cases out of a hundred. The success of the work depends on the teacher, but it also depends on the parents and the trustees. A teacher can get around the trustees if she goes about it in a proper way; she can enthuse the boys and girls, who will go home and talk to their mothers, and the mothers can talk to the fathers, and the fathers will get so filled up with the idea of the school lunch that they will talk to the trustees, and with three or four fathers talking to the trustees, they will say, "Oh, go ahead and try the thing." That is all the teacher wants. She will make a success of it.

We have designed a special equipment for rural schools which is in use in all Normal Schools, and which will stand in one corner of the room. The Government gives a grant of from $40 to $75 to the school board installing this equipment, and from $15 to $50 to the teacher (depending upon her qualifications) for teaching Domestic Science. An additional grant of $10 will be given to the teacher who serves the hot lunch from November 1st to March 31st. The second year the Government gives a grant of $20, which can be used in purchasing supplies or equipment. Full information will be found in the Manual on Household Science, prepared by the Department of Education. Most schools solve the problem of getting supplies the first year, by the children bringing them, and the majority of teachers say their difficulty is to check the supplies brought by the pupils. Other teachers have had a concert and raised money for the supplies. If you put Angelina Smith on the platform to recite, Angelina's two brothers and sisters, and uncles and aunts are all willing to pay 15c to hear her recite. You can raise no end of money in that way, and apart from the raising of money the community spirit you get in the district is of remarkable value.

I would like to say in conclusion that you cannot in my opinion, carry out your motto "For Home and Country" in a better way than by concentrating your attention on the conditions of the rural schools of this Province.

After Mr. Leake's address, through the generosity of the Department of Education, with the assistance of the Normal students, a box lunch with a hot cup of cocoa was served to each delegate. Following the lunch, the delegates were conducted through the new Parliament Buildings.

HOME AND SCHOOL CLUB WORK.

Mrs. R. V. Fowler, Perth.

In our Institute this year, after our efforts in war work, we were rather at a loss to know just what to turn our hands to, and we thought it well to have a branch of work for the whole district to take up. When I was in Toronto last year, in February, I was very much struck with the work of the Home and School Club, and I thought that would be very good work for all the Institutes in our district to take up, and in all of the branches that I have gone to so far, I have advocated the forming of a committee to take up this work in rural schools, and in the town schools to act in co-operation with the teachers. I asked the Branches to appoint a committee for each school section to work with the teacher and to try to have one or two meetings each term to which all the mothers of the district are invited. The chief difficulty is the lack of interest taken in the schools through the country; the parents do not visit the schools. We want them to visit the schools and to work in co-operation with the teachers. I have asked our branches to take up this work and to report on it at the next annual meeting. I can think of no other work in which we will follow out our motto "For Home and Country" as well as this, because the child and the care of the child is certainly the foundation of our nation. Besides being a benefit to the school, it is a benefit to the community, and one of the first things would be to make the school a rallying point, as they all ought to be. I had the opportunity of attending the Teachers' Convention two weeks ago, and of putting this matter before the teachers in session. I asked them to co-operate with any of the Women's Institutes where they took up this work, and where they were not taking it up, if they would try and start it themselves. If we got the parents to the schools, and they saw the equipment of the schools, it would not be long before they would want consolidated schools, because they could see that better work could be done, and domestic science and manual training given to the girls and boys, and particularly the hot lunch. After this morning, I expect you will all go home prepared to do as much as you can to have these hot lunches in your school. If you will only start them you will find there is very little trouble in carrying them on.

Our community work could easily start from our schools; make the school the rallying point for the whole community.

Mrs. J. Reid, Renfrew, presiding: If the idea of the drinking fountain were the only thing you took home to your section, it would be worth while for the sake of your boys and girls. For the price of $7.50 a closed drinking fountain can be bought; there is a tap to it, and the children can take their own cups to school. The fountain should be washed at least once a week.

MEDICAL SCHOOL INSPECTION.

MISS E. JAMIESON, TORONTO, ONTARIO SCHOOL MEDICAL INSPECTION STAFF.

I know the Women's Institutes have been doing something in medical inspection for a number of years, and they are to be commended for commencing this work. The Department of Education has appointed a staff and are going to cover the whole Province of Ontario, rural schools, town and village schools where there is not now a system of medical inspection. I began the work with the Department of Education early in May; previous to that, I spent nine years with the City of Toronto in doing actual school work, and I felt that to come on the work of the Province was a great opportunity, in fact, it is so big that it is almost paralyzing.

Medical inspection is not a peculiar thing, though in going into the schools now, they say it is a new fad of the Government, but we find the first legal decree establishing medical inspection in schools was passed in France in 1833, and it ordered the inspection of school buildings, general cleanliness and the health of the children. Later, the scope was enlarged in 1879 and again in 1884.

The first system of medical inspection of schools in the modern sense of the term was inaugurated in Brussels, Belgium, in 1874. Soon after, Germany started it, Hungary and Austria, Norway and Sweden, and then later England, Japan and Russia, a somewhat improved system of medical inspection of schools. Boston was the first city in North America to establish the system, and British Columbia has the honor of being the first Province in our own land to have a provincial system of medical inspection. Since that time, Manitoba, Saskatchewan, Alberta have put in the system; Ontario has just commenced. We have been the last to come in line, but I hope we will do wonderful things as we go on.

The aim of medical inspection of schools is to give each child a healthy body and a sound mind. Our ideal is the normal child. In these days of strenuous life and keen business competition, it makes very little difference how bright a child is, if it lacks the physical strength to stand the modern strain of business and professional life. I was keenly interested in Mr. Leake's address this morning. I felt like applauding all the way through. The hot lunch is going to do wonderful things; you know malnutrition is not confined to children below the poverty line, because malnutrition may mean more than insufficient food; it may mean improperly balanced food or improper mastication due to the teeth. Children seated about the teacher are apt to be more hygienic; they will wash their hands and sit down to eat their lunch, and masticate more carefully.

Rural schools and rural homes are somewhat notorious for the exclusion of fresh air. Rural schools are not at the present time built in a way to have proper ventilation; children are not getting the proper amount of fresh air, and that is something that needs looking into.

Another great aim of medical inspection is to teach the elementals of personal and public hygiene. The relation of physical defects such as diseased tonsils and teeth, defective vision, etc., on the general health has been so often demonstrated to you that it is merely superficial to detail them here, but we need to show the means to employ to correct these conditions.

Perhaps you would like to know something of what we find in the rural schools. We are working principally in the older settled part of Ontario where we think we have things pretty nearly as they ought to be in the homes at any rate. We find the school rooms are badly lighted; the decorations are so dark it is like sitting in a prison on a dull day. Part of my work is to take the vision and hearing of the children, and I very often find it almost impossible. On a dull day I cannot get what we call the normal vision, so it shows you how difficult it is for these children to do their work. The decoration has a great deal to do with it. Some of the schools have such dark colors—dark browns and dark gray ceilings which absorb the light—and when the day is dull all the light there is is absorbed. The school building should not have cross-lighting. Some of the buildings cannot be rebuilt at present, but if the transparent shades could be put on and light colored decorating used, to make the school bright and attractive it would make a great difference. We make our homes attractive, and then let the children sit in dark, unattractive schools.

Defective vision we find is really quite startling in some places. I have even found it so bad that children are retarded one or two years in their school work. That is a serious problem. Two weeks ago I found a boy seventeen years of age whose vision was so defective that it was easily understood why that boy had not gotten any farther along than he had.

Then we find the mouth conditions are very bad; the absence of the use of the tooth brush is marked, but it is a comfort to know when we go into the schools and talk about it, and then go to one of the homes in the evening, the tooth brush is gotten out and used vigorously while we are there.

I have been keeping my eye on the lunches, and I occasionally find a boy with nothing but fruit cake and cookies and such things in his basket. You cannot build up good strong muscle and an active brain on that kind of food. The mother, I suppose, thought she was being kind to a child to give it that; but it is mistaken kindness. If the mothers could be visited and talked with and have the matter explained to them, it would be all done away with. The object of our inspection of the Province is, when we get through with the surveys, that a school nurse be appointed who will visit the schools regularly so many times a year. We are meeting with much sympathy from the trustees and complete sympathy from the mothers regarding this question, and we are being asked frequently what the school nurse is going to cost, so in one or two of the counties where I have been working we have studied the county, looked up places that might be headquarters, and tried to arrange what might be a workable plan. We think a nurse might serve about thirty rooms altogether, having a town for a centre and reaching out to the rural schools. Thirty room make a large unit, but it would be small enough to be worked and the homes reached. The nurse would link up the home and the school, and that is what is needed. The survey amounts to very little if it is simply to find things that are wrong and then do nothing about them.

While we do know, when the survey is completed and parents are notified of the defects found in their children, which may be remedied, many of them do go about it and have them attended to at once, yet there are many busy mothers and many mothers who need educating along these lines, and that would be the work of the nurse. She would teach health laws in the school, and she would go into the homes and see that the mothers understand these things. She must be something of a Public Health Nurse and know something about the babies and the little toddlers at home. She must be a woman—something more than a graduate nurse. In the hospital we learn how to take care of the sick, but in this work, we are teaching the children how to keep well, and if we all obeyed the laws of health, how few of us would be ill as much as we are. I believe we could do away with hospitals and many other things if we only obeyed the laws of health. This would be part of the nurse's work, to teach this in the home and to have health talks that the children could comprehend.

I thought perhaps you would like to ask a few questions. I prefer that you would let me know what you want to know.

There is one thing Mr. Leake spoke of that I have been thinking of so much, and that is the supervision of the children during the noon hour. I think that is one of the most important things in connection with the educational system of the public schools. If we taught our children the right kind of games and supervised the games, that is an education in itself and gives them something to think about. I do not think the girls and boys in public schools should be left alone during the noon hour; but besides being supervised, they should be taught games that will develop them mentally and physically, and will teach them self-control and respect for other people's feelings. If they learn to play clean games, they will understand how to play the game of life better.

Q.—Do you find any opposition in connection with people having their children examined?

A.—Very little indeed. In one county there was an objection by one of the trustees; the other two were willing, but because of the one's objection we were not allowed to go in. The mothers of the district got together and asked for the church, and through the President or Secretary of the Women's Institute we were taken to the church and inspected the school children of that neighborhood there, and we had all the children present except the trustee's children. At one school that we visited in connection with this matter, we were met with this question: Was the doctor who was sent, a properly qualified doctor, because they did not want their children examined by some one who had not gone through the regular training. The staff appointed by the Department of Education are fully qualified physicians and nurses. They must be graduates of recognized training schools, and the physicians are fully graduated physicians, members of the Ontario Council, so it is no experimental work.

Q.—What good does it do for a nurse to go into a school and tell a child, "You have decayed teeth or tonsils"?

A.—In our system at the present time, we leave a card for every child with its record, in the school. Dr. Waugh purposes making this record provincial; if a child goes from one town to another, this card will go with it; it has the medical inspection record on one side, and the educational work on the other. The survey amounts to very little unless you put somebody on to follow it up, and it is not only to get a few to have their teeth fixed and tonsils removed, it is health teaching the year round that is necessary. It cannot be spasmodic work; it must be continuous, and the appointing of the school nurse who will go into the homes and visit the schools regularly so many times a year, will overcome that.

Mrs. Hobbs: Is there any provision for the people who cannot afford to have operations performed, especially if it is a very serious operation?

Miss Jamieson: No, there is not, but Ontario is only commencing this system. Where financial aid is necessary it will have to be worked out that the State must do it. Of course we have the Children's Hospital in the city, and it is open for all children, free, whose fathers earn below a certain salary, except 10c. for a ticket of admission on which their history is kept. There are two days a week for examining eyes and for having the nose and throat examined and so on, and the children of the whole city come to that, but it is the rural places that have not yet made provision for this, but that will be a necessary outcome when the need is found, and we are trying to find the need and show it up as quickly as we can.

Mrs. Muldrew: You can get no inspection of a child unless it is of school age. They have to go along with something wrong with them until they are six years old and going to school to find it out?

Miss Jamieson: If you had a school nurse going into your homes, she would ask to see the babies and toddlers. I do not think a nurse ever goes into a home without asking to see the baby and the younger children—the children in the home as well as the children in the school. When the school inspection is being made, the parents sometimes bring the children under age to us, and they are inspected, but there is no other way to really have this undertaken except by the nurse who will visit the homes of all the school children in the district. The work is educational and preventative.

Mrs. Hobbs: Is there anything like clinics where mothers can bring their babies?

Miss Jamieson: Yes, Toronto has twenty-two well-baby clinics where children are brought regularly to be weighed to see that they are keeping well, and the towns and villages should come to that. It is very important.

Miss Sutherland: In reply to the question Mrs. Hobbs asked regarding children receiving attention whose parents are unable to pay for it, up to the present, in the majority of places where inspection has been held, the Women's Institute have taken that matter up and have put on clinics. Through the Institute, over 1,500 children have been operated upon for the removal of adenoids and tonsils. Then child welfare clinics have been put on where the children under six years of age receive attention.

CHILD WELFARE CLINICS.

Miss K. MacIntosh, Brampton.

For the organization of Child Welfare Clinics, we found that the best plan was to get the co-operation of your local doctors first. This we did by personal visits to the doctors. We also had some one from the Provincial Board of Health meet the doctors in our office and talk to them as well. We found one or two who objected the first year, but this year there was not the slightest objection. Every one of the doctors came in to help. Then we secured the co-operation of all the women's organizations. The Institute took charge of the diets in connection with the child welfare work. It was carried on in the Sunday School room of the Presbyterian Church. The main room was used for an exhibit room, and the Provincial Board of Health put on special moving pictures for the school children from four to five o'clock. The Institute had exhibits of foods, and the proper diets the children should be given from the time that solid food is given, at from twelve to eighteen months, up to school age, and then to connect with the school work, we had a coal oil stove and all the cups and spoons and other necessary equipment that would be used in the rural school to supplement the cold lunch, because we wanted this to be county-wide, and not just for the town. We divided the town into sections and the rural people that were nearest that section could come that day, but if a country mother could not come in one day, she could come in another. One of the smaller rooms was used as a dressing room. We had two doctors, record cards and other necessary equipment. The clinic room was in the larger room, and we had a waiting room where mothers brought their children and the nurse took their history.

Everything goes with a bigger swing the first year, because there is an element of curiosity, and some do come from curiosity. The first day last year I think we had seventy-eight babies up to two years of age; we also had the children from two to six and the older children. They were weighed and thoroughly examined and the cards made out, and the second day we had ninety-seven. This year our attendance was smaller, but the thing that pleased us most was the fact that so many of the mothers came back. We gave out the booklets published by the Board of Health, "The Baby," and we had many requests come to the office later for copies of this book, and for information, and we found the interest of the people was thoroughly aroused. Recently in taking the matter up with a number of our local doctors, we have planned to carry on regular clinics, probably only once a month to begin with, but later we hope to establish permanent clinics.

CONSOLIDATED RURAL SCHOOLS.

Mr. A. MacLaren, Ontario Agricultural College, Guelph.

Dr. Waugh asked me to come here and outline to you some of the plans that the Department of Education now have for the consolidation of rural schools. In introducing it I want to show how we have been led up to this question of the consolidation of rural schools from the time, away back, when school work was carried on by the itinerant school teacher who travelled around from home to home in the old settlement days; he would spend a short time in this home, teaching the boys and girls and father and mother, and then move on to the next and so on. There were a lot of good things connected with that, because he actually lived with the family and knew conditions. Then the time came when there were so many settlers in the country that it was necessary to gather the children together, and while the teacher lived in the home of the parents, he had a separate school building. When Dr. Ryerson became Minister of Education, he standardized these schools, and formed the country into sections so that they might be taxed for the upkeep of the school in that section. Previously, it had been left entirely to local initiative. It was necessary to establish schools in the smallest districts, so that the children would not have too far to walk. There was a school in every district within a radius of two to two and a half miles.

That has gone on until the present day in Ontario. For certain reasons we are gradually becoming dissatisfied with that system. I want to point out a few of the reasons why we are dissatisfied with the district system and are putting forth another system of schools.

The first is the depopulation in rural districts. I went into a school in Durham County about two years ago, and there were two boys. We asked the teacher if that was all she had on the roll; she said "No, we have another boy and he is a brother to these two." In another school, there was the teacher and one boy. The same thing is true all over the country. I remember hearing Prof. Reynolds say he was a member of a family of fourteen; across the road there was a family of fifteen, and on the farm next was a family of sixteen—forty-five children in three families. You can hardly get a section in this country where there are forty-five children in the whole district nowadays. That is a serious condition and is one of the reasons that has caused us to look around for a solution of the problem.

Another thing is the changing of positions of school teachers. It is said that almost half of our rural school teachers change every year. There are a number of reasons for that: first, the salary, second, the social life, and third the question of board. We were in one school in Wentworth County last week where the school teacher who was there could only find one home in the district that would take her in, and they say they will never take in another teacher; not because they object to her, but they object to having anybody in the home, so the next teacher is going to be met with the problem of board. Then with the small number of children attending the schools, there is no inspiration for the teacher. Think of that teacher going down every morning with that one boy! Can you wonder they move to another school?

Then there is the changing social and economic conditions. It was all right to have a one-room school in the little settlement set off by itself without any communication with the rest of the world, but to-day our interests are enlarged. You cannot take any one school section in any part of the Province and isolate it. It has connection with all the country around it.

Our ideas of education are changing. It was all right to teach just the three R's in the past, but now we have men coming along and suggesting there should be Domestic Science, Manual Training and Agriculture taught in the schools, and that we should have school gardens and hot lunches and all kinds of things which we recognize as being for the progress and improvement of our boys and girls. We have to change our system to adapt ourselves to these new demands.

Then there is another thing—inequalities in educational opportunity. Nobody who knows the situation in rural Ontario can claim that the country boy or girl is getting anything like an equal opportunity of education that the boy or girl gets who lives in the towns or cities. Then there is inequality of taxation. In a recent survey it was found there were two school sections in a district; in one, the rate was one mill, in the next, it was fifteen mills; in one section, the assessment was a few thousand dollars; in the other, it was a number of hundreds of thousands of dollars. You cannot expect to give the pupils in that one section the same opportunities as the pupils in the other, and we are not educating the boys and girls for the school section but for the State at large.

Then the number of recitations in a school is another question. In eighteen schools, we found there was one school teacher who was having thirty-four recitations a day. The average in these eighteen schools was twenty-four recitations a day; the average time was something like ten minutes to a recitation. How can you expect one teacher to hold twenty-four recitations a day besides undertaking the regular work of the school, taking an interest in school gardens and agriculture, manual training, domestic science, and being a community leader? It is impossible. In Wentworth there was a young lady teaching manual training and domestic science, and they were having the hot lunch at noon, and the regular desk work. It can be done, but it is a tremendous task.

Then comes the question of School Medical Inspection. I won't enlarge on this except to stand behind everything Miss Jamieson has said.

I do not want you to get the idea that I am a knocker. I admit that there are hundreds of schools where everything is quite modern—school building and everything—but we look at the question from provincial-wide viewpoint. There are only 100 schools with equipment for domestic science. We have only a small proportion teaching agriculture in the rural schools, and we have been at it for years. We have been absolutely forced to try to find a new method for the schools to meet the conditions.

The first consolidated school was formed in 1844, in Massachusetts, so we are not the first to try this idea. The consolidation of rural schools simply means bringing together two, three, four or five into one central school, and then drawing the children to that central point in a waggon every day during the cold season.

Let me outline some of the advantages that will come from this consolidation. First of all, there is the better grading and classification of the pupils. Instead of having one teacher for the whole school from the primary up to the senior fourth, the children are graded and put in separate rooms. Then, the second advantage is you can get high school education right in your own district, without your boys and girls going away from under the home influence at one of the most impressionable and important times of their lives. We hope the time will come when every one of the consolidated schools will take the whole high school course in its curriculum. If any of you have travelled on the trains to the high schools and back to the rural districts, you will have some idea of the dangers that face these boys and girls. Some of them travel from seven in the morning and don't get back until seven or eight o'clock at night, and they hang around the town waiting for their evening train, or else they go to town and live there all week and only come home for Sunday.

The next advantage is that there will be Medical and Dental Inspection in every one of the consolidated schools. The Act reads, that the school shall have Medical Inspection twice a year and Dental Inspection once a year by a duly qualified physician and dentist.

Then there is the possibility of arranging a Teacherage where the teachers can live in a home right on the school grounds. Then it will enable you to pay a higher salary to your teachers and principal, attracting married men as your principal who will set up a home there and provide the board for the assistant teachers.

Then there comes the question of good roads. If you get your consolidated school, you get good roads, because there is an attitude to make the roads better for the children to travel to school. It is bound to come, and has come in the United States and the other Provinces of Canada—good roads have followed the consolidation of the schools.

Then the consolidated school becomes a social centre, where there is a library, and the debating society and other organizations can hold their meetings, and where the recreation of the whole community centres, where there might be a moving picture machine and moving pictures presented to the community, so that the school becomes the community social centre where everyone meets on common ground for discussion and talks, for playing and working together, and in that way a community spirit, willingness to work together, Christianity, democracy in action, is developed.

It has been the experience wherever consolidation is established that there is a larger enrolment. In one district where previously there were only three children over the age of fourteen, after consolidation there were sixty-five. No new children had come into that school section, but the children who had been there before had started to school again. Not only is the enrolment enlarged, but the average attendance is enlarged. With our present statistics, our average attendance is about 55 or 65 per cent. under the ordinary school system. That means that from thirty-five to forty-five children out of every hundred are at home every day in the year. Put that up against some of the other countries and you will see where we are coming to. As soon as consolidation takes place that average attendance will jump up to 75 and 85 per cent., and in some cases 90 per cent.

The next thing is the equipment that it is possible to secure for these consolidated schools. It states in the regulations that, unless for reasons sufficient to the Minister of Education, there shall be in that school a musical instrument—piano or organ—and a lantern or moving picture machine. It also states: the Department of Education is prepared to pay 40 per cent. of the equipment the first year, up to a total of $400, and for each of the three years following, 20 per cent., so that in four years the Department of Education pays your district the price of that equipment up to $1,000.

The children will also stay in school for a longer period. Instead of dropping out at fourteen years of age, they will remain on until they are sixteen or seventeen years of age. There is also the possibility of extending the educational facilities to the whole community. Not only are you serving the boys and girls up to eighteen years of age, but from time to time there are lectures which gather the whole community in. There are short courses put on at night or night schools for the people of the whole community.

Then the last advantage, and by no means the least, it promotes an enlarged play life. How could that teacher with two boys have a game of baseball unless they played catch? You cannot possibly organize play in the great majority of these rural schools, and yet those children are simply eager for it. I went into one Wentworth school last week, and while the Inspector was talking to the teacher, he said to me, "Take these boys and girls out and teach them some new games." So I taught them some new games, and they had a great old time and enjoyed it immensely. In the old schools it is hard to organize and supervise the play periods and that lunch hour, but it is going to be much easier under consolidation.

As to the objections that are urged: First of all, the roads are too bad. That argument has been advanced in every State and yet they have overcome it. The second one is bad weather—wintry weather—and yet there are some schools that never missed a single waggon trip during the whole winter, and none of them have missed any more than three or four trips in the whole year.

The next objection raised is the increased cost. It is not the purpose of the Educational Department to help you to build; and it is going to cost more to carry on this school than under the old system; there may be a few cases where it may be held down to the same cost, but do not count on that. But taking into consideration the increased enrolment, increased average attendance, and everything else like that, you will find it will cost you less to give each child one day's education than under the old district system. Besides that you are getting a better class of education, better teachers, more specialists, and you are adding to your regular course, High School work, and your boys and girls are getting their High School education right at home. Those of you who have sent your boys and girls to a neighboring town for their High School work, will know what it cost you to do that. And then count what it costs in moral training for your boys and girls, and ask whether it is worth while to spend the extra money necessary for the better education you can get under consolidation of rural schools.

Another obstacle is tradition. A man says, "I was educated in that school; my father was educated in it before me, and what was good enough for me is good enough for my boy." Is a cradle good enough for cutting your grain? Are we content to do our work with the machinery used sixty or seventy years ago? If we are not, why should we be content to educate our children with the same machinery we had thirty or forty years ago?

Then there is prejudice. After you have used all the arguments, a man sits and says, "It won't work." Simply prejudice against a thing in advance of a trial, and every one of these objections have gone by the board.

The next thing is satisfaction with present conditions. We think the school section is all right, and the system is all right as it is. It is a surprising thing that in the districts where consolidation has been tried, those who had been the most vigorous opponents, after two or three years of trial, become the strongest friends we have.

As to what the Department is prepared to do to help promote the consolidation of rural schools, the Consolidated Schools Act has been passed this year, and it provides for an agreement amongst the school sections. If there is any desire in a certain district to consolidate, it provides for a certain form of agreement between the four or five school sections.

Then it arranges for the apportionment of liabilities and assets, and for the signing of the agreement by the Minister. As soon as the Minister approves of the agreement, consolidation is effected, and he appoints a certain day on which the election shall take place—five trustees, two retiring each year. As soon as that Board is elected, they take over the management of the schools that lie in that area, and they run them and handle everything until the consolidated school is finally built.

BRANCH REPORTS.

Kemptville Institute—North Leeds and Grenville.

Mrs. Angus Parkinson, Kemptville: During the last two years previous to the ending of the war, the general work of our Institute had been dropped in order that all our spare time from our homes might be given to Red Cross work.

In May of this year, we met and reorganized, so that we have only six months' work to report. Our membership at the time of re-organization was twenty-three, but each one of us considered herself a "Membership Committee" and tried to secure one new member; now we have 546 names on the roll. A number from the country surrounding our town have joined and we are glad of this for the women of the country and town should become better acquainted and have a common interest and I know of no better way to bring this about than through the Institute.

We have adopted the plan of having a printed programme arranged by a committee. Some of the subjects taken up are: "Parliamentary Procedure;" "A Square Deal for Boys and Girls;" "Hygiene of the School Room," etc. At one meeting we are to have three ten minute papers on different subjects. At our September meeting, at which there was considerable business to be attended to, we had roll call answered with a joke or pleasant thought. Refreshments are to be served at some of the meetings. The social evenings are to be given up entirely to music.

In order that the young girls who are employed during the day might attend, we have changed the time of our meetings from the afternoon to the evening.

This winter, we hope to assist the boys and girls in raising enough funds so that by spring they will be able to erect a proper bath house and have a swimming place conveniently located, cleaned and made fit to swim in. The hockey team has offered to play two benefit matches.

At a public meeting called to organize a Horticultural Society, it was announced that Hon. G. H. Ferguson would donate one hundred dollars towards helping to improve the appearance of our town by public planting. As it was too late for a Horticultural Society to receive the Government grant, it was decided not to organize, so that the Institute took up the work. A special meeting of the Institute was called and different committees were appointed to look after different phases of the work, such as waiting on the school boards and library board, and asking permission to carry out our ideas according to the blue print plans which were presented to them for inspection.

Some one suggested that we would not be able to keep the beds from being destroyed by the children pulling the flowers, so we visited the schools and the help of the children was solicited in keeping these beds from being destroyed. The Council was asked to co-operate by having the by-law regarding the roaming of cattle at large enforced. Then we asked our editor to give us some articles in our local paper on "Cleaning Up." Next, we got out yellow handbills, and advertised that the sum of $25 would be divided in prizes for the best kept and most artistically arranged lawns, back or front, in Kemptville or immediate vicinity, and anyone wishing to secure plants could secure them through the Institute at reduced prices. The result was that hundreds of plants were ordered, and when they arrived all the members were called out and we had a full day of sorting out the orders and planting. Ten large tubs of flowers were placed on the front streets, besides numerous window boxes. Everybody seemed to get interested in fixing up their lawns, whether large or small, window boxes were put out where flowers had never been seen before, a spirit of cleaning up seemed to follow and I think more houses in Kemptville were treated to a new coat of paint than would have been had we not made this move, and the flowers grew and were beautiful. I never heard of a boy who pulled a flower. They were just as proud of these flower beds as were the members of the Institute.

In July, about forty of the members took lunch and motored to the Experimental Farm, Ottawa, and all said, on returning home, that it was a most enjoyable trip, and we look forward to going again next year.

In August, Miss Pearson and Miss Hudson assisted Mr. Buck in the judging of the lawns. At the conclusion of the judging, about five in the evening, the members of the Institute met on the lawn of one of the members and had tea, after which Mr. Buck gave us a very instructive talk on the selecting and planting of fall bulbs. I might add that we have ordered three thousand bulbs for our beds this fall.

To raise money to carry on this work, we had a lawn social at which we realized $42 and at the school fair we had a booth, and also, we are having printed to sell an autographed cook book of recipes that are not "fizzles" but ones that have been tested and tried out by the members of the Institute.

As a Society, we feel we owe a great measure of our success along the horticultural line to the willing assistance of our district representative, Mr. W. M. Croskey and to Prof. Bell of the Kemptville Agricultural School. We found the work most interesting and we were glad after these years of destruction to again be able to plant flowers so that our homes and country might be a more beautiful place to live in.

CLAY BANK INSTITUTE, SOUTH RENFREW.

MISS ANNA LEGREE: In June, 1917, a Branch was organized at Clay Bank. Most of our time and thought has been expended on war work.

During these past years our community has been roused into action. Women forgot to be narrow minded and selfish. They came to our meetings, leaving their petty worries at home, anxious to do what they could to win the war. Institute work brought us nearer our sisters. A fire of sociability was kindled which has been growing brighter all the time.

We went to our homes after these meetings with a new interest in life. Each was anxious to contribute something dainty for the soldiers' boxes which we packed. Money was raised by holding sales of home-made cooking in our nearest town. Because of interest in this, our lives were made more worth living.

Realizing the number of young lives being sacrificed, we looked upon our children with eyes that saw them as grown men and women. We understood how soon they would be called upon to fill the broken ranks in life. With this also came the thought that their education must receive careful attention. The trustees responded at once to the suggestion that the interior of the school needed decorating. The Women's Institute has taken an interest in the sanitary condition of the room in which the children spend so many hours.

Since the war money has been raised and a piano purchased. This helps to brighten the lives of the young people. The school, we hope, will be the scene of many enjoyable evenings during the coming winter.

One member plans the programme of our meeting for each month. There has been keen competition and we have been pleasingly entertained.

During the summer, we united with the Farmers' Club and held a picnic. Owing to active interest taken by members of Club and Institute we scored a financial success. Our receipts were over $500.

As a member I would like to say our Institute has wrought a great change in our community. We look upon life with broader views. We are united and in union is strength. We hope to do good work in the future. As delegates we are desirious of carrying home helpful suggestions.

DRUMMOND CENTRE INSTITUTE—SOUTH LANARK.

MISS KATIE MCLAREN, R. No. 6, Perth: Drummond Centre has no Community Hall, but the Orange Society owns a commodious building very well furnished and comfortable inside and we hold our meetings there. As they would set no charge to our Institute, we give them one dollar for each meeting to cover their expense in opening and heating the building for us.

Our Branch has twenty-five members. Being a purely rural community, we have not many ways of raising money except by making a house to house canvass and serving meals at the School Fair. Money is donated to us sometimes.

At our annual meeting in May, we try to appoint one director on every telephone line. We thought this the most convenient way of keeping the members informed about business and the absent members of the meetings.

Our Programme Committee arranged a programme for the year. Women and Franchise, Laws, Banking Rules, Christmas Giving, and Food, are a few of the topics suggested.

For February, the meeting will be held in the evening, and the members will invite their friends to spend a social evening with them. We tried this last year and had one hundred and sixty people present. We held our regular meeting first. The remainder of the evening was spent in music, impromptu speeches and social intercourse. We served sandwiches, cake and tea.

We always make the request that as many as possible attend the lecture given by the Department's delegate in June.

This year, we took advantage of the Department's offer of seeds, and everyone was satisfied with results.

Every year, six dollars in prizes (three dollars to girls and three to boys) is given to the School Fair.

This year, we are placing a drinking fountain in each of the four nearest schools.

Flowers and fruit are sent to the "sick and shut-in" of the neighborhood.

We sent twenty-two jars of fruit and jellies to the Women's College Hospital, Toronto, and, this month, a thirty-dozen crate of eggs. A few women who are not members always contribute towards this work. We also intend packing a box of old linen.

A house to house canvass is being made for funds for Queen Mary Hospital. If we can raise one hundred dollars we will name a cot for one year and for one year only if that much is subscribed, if not we will give what is.

Twenty-five dollars was sent to Canadian Institute for the Blind, to be especially used for the soldiers.

Last winter, a box of clothing and bedding was sent to Secours National Society in Toronto.

The Navy League letter asking assistance will be brought up at our next meeting.

MOREWOOD INSTITUTE—DUNDAS COUNTY.

MRS. G. C. CHENEY, Morewood: In August, 1918, we sent a delegate to the Better Rural Community Life Institute at Russell, and from her report we began to realize the importance of Consolidated Schools and of the Medical Inspection of Schools. Since then, we have co-operated with the Farmers' Club in creating the atmosphere necessary for these innovations.

Two delegates from our Institute attended and addressed meetings of the ratepayers in two schools and carried a motion in favor of Medical Inspection.

In February, a delegate from our Branch attended the Toronto Convention and in her report emphasized the Demonstration Lecture Courses and the Child Welfare Exhibit.

In August, we held a very successful Sewing Course and added six members to our branch. We have been promised the attendant and Child Welfare Exhibit for the second week in October and are planning to have a good attendance and Conference of Mothers.

Our Annual Young Girls' Exhibition was held and $25 was awarded in prizes for Needlework, Cooking, Art, and Horticulture.

Our programme is made out for the year, beginning with June, by a committee which is changed every year. One, and sometimes two papers are given at each meeting by some of the members on subjects of interest to all.

MAPLE LEAF BRANCH—LENNOX COUNTY.

MRS. W. G. FRETTS, Napanee: Realizing that we could all find ample time to do work outside of our own homes and that the war was now over, we decided to take up hospital work in our nearby city of Kingston, with a two-fold purpose in view. First, helping charity, and next, holding our members. We asked the Superintendent if we might take a room, furnish it completely and maintain it. This request was readily granted, and a very pleasant room chosen. The cost to furnish the room complete, the Superintendent quoted at $250, then each successive year the cost would range from $75 to $100. We have now completed the room. All linens have our Institute name on, also the brass plate on the door has "The Maple Leaf Institute of Lennox County." Many of our members donated pillows; some, white woollen blankets, etc. At our last meeting we were sorely in need of funds. When our president announced (at the next meeting) that there would be a $1 shower in aid of the Hospital, all the members responded splendidly. We make a special canvass each year for new and renewed members. Our Institute took a new plan this year which made a most favorable impression on the members. We ordered our fruit direct from the grower, and for a substantial order were granted a discount of 10 per cent., which paid the express charges and left a balance for our treasury. Our means are so limited now that we do not get out programmes, but one member is appointed each month to arrange the next month's programme, then we advertise well in the press.

PICNIC GROVE INSTITUTE—GLENGARRY COUNTY.

MISS E. MCINTOSH, Lancaster: Our Institute, which is the farthest eastern in Ontario, being in the southeast corner of Glengarry County, was organized only four years ago, and is composed mostly of girls and young women, with about a half dozen older members whose wider experience always helps us over many difficult places. We had in all a membership of about twenty last year.

Our meetings are held at the homes of the members, and are reasonably well attended, although we do not attempt any entertaining programmes. We always have considerable business or a discussion or exchange of ideas on some practical subject according to the season of the year. Only on special occasions do we serve tea, an innovation in this community of Scotch hospitality that has given complete satisfaction as we are all busy farm people.

Now that the Red Cross does not need our assistance—and how thankful we all are for that fact—we have been working more for our own hospitals. Each year we send about five dozen sealers of fruit and pickles, a collection of vegetables, and this year also a box of eatables to the nurses of our nearest hospital, the Cornwall General. The hospital supplies the empty sealers and we distribute them among our members to be filled. At present, we are planning to buy material and make it up as required and are just waiting definite instructions from the hospital as to what is most needed. We also sent a cash donation to the Military Hospital at Ste. Agathe des Monts to be used in supplying some little treat to the returned soldiers there. Another cash donation was given to a local family in straitened circumstances, who had lost three sons in the recent war.

Last winter, we had the Demonstration-Lecture Course in Sewing which we appreciated very much. We have now had three courses, Domestic Science, Nursing and Sewing. Of the three, we found the Course in Domestic Science perhaps of the greatest value, possibly because we have had more opportunity of practising our acquired knowledge.

Our work in connection with the schools, we are only beginning as yet. We try to help the School Fair as much as we can and always have a booth on the grounds the day of the Fair and serve lunch.

At our annual meeting we resolved to help the Local Agricultural Society in any way possible and a good opportunity presented itself when asked by the Directors to serve lunch at their annual ploughing match. Last year, we served lunch at noon and dinner after the match, and this year we felt quite repaid for our effort when the directors told us they could not have the match unless we consented to do so again, as it was an easy matter to secure a field in which to plough compared to making arrangements for the dinner. Incidentally, we cleared over $50 last year for our Red Cross funds at the match.

We have been discussing the advisability (when our funds warrant it), of purchasing an equipment for the sick room—a hospital bed with table attachment, rests, etc., an ice bag, hot water bottle and such accessories to be rented or loaned as required. In a rural place we felt these supplies would materially lessen the work of those in charge during sickness.

The Referendum of course occupied our attention this fall, but we gave what assistance we could to our local W.C.T.U. in their work.

This constitutes an outline of our little part in the great volume of work being done by our Institutes of Eastern Ontario, and we can only hope that perhaps our little endeavors being made known may perhaps, unknown to us, be of some use to some larger Institute with its wider sphere and bigger undertakings.

BEACHBURG WOMEN'S INSTITUTE—RENFREW COUNTY.

MRS. A. M. MCLEAN, Beachburg: We consider the year ending with May 31st of this year as one of the most successful in our history. With a membership of thirty-two we contributed war work valued at $1,038.45—this in addition to our usual activities in our own community. On May 24th, we entertained, in the Public Hall, the grandmothers of the community to an old-fashioned quilting and tea, and were more than repaid for our effort by the pleasure of the twenty-seven dear ladies who were our guests. This Grandmother's Day is an annual event in our Institute, the entertainment taking different forms.

We gave financial assistance to a newly organized band of Boy Scouts to enable them to go down to Ottawa in June to meet Baden Powell, the Chief Scout, and in other ways have encouraged and mothered these scouts.

On the occasion of a Demonstration in our village we undertook the catering in the Dining Hall, thereby clearing $275.

Realizing the great need of a place of entertainment for our young people, we have rented a building formerly used as a store, at twelve dollars a month, which we have opened to the young people as their particular property on any and all occasions, with certain provisions as to behaviour and care of furniture. Also we invite the women and girls of the surrounding districts to make use of this room as a Rest Room, or place for waiting for their men folk, or meeting their friends. While the undertaking is not meeting with unlimited success, still we are encouraged to believe that as people realize its object it will soon justify its existence. Our monthly meetings are held in this building which we have furnished with several small tables and chairs. Friends have contributed magazines, and a few books, and we expect the winter nights will find it much used. Already a number of our school girls had a pleasant afternoon tea for two of their number who were moviig away, and later the scouts held a very enjoyable evening entertainment and supper as a farewell to one of their scout-masters who was leaving for another town.

In November, we shall hold a social evening there for our members and their families, and hope throughout the fall and winter to find many uses for this room. and to be able to educate the public to the need of a Community Hall.

At the close of the holiday season, our Institute issued invitations to all the girls and boys for a Sports Day. With the permission of the School Board this was held on the school grounds about two hundred children being present with quite a number of parents and friends. A very enjoyable programme of sports was carried out, closing with a pretty folk dance. Prizes of small sums of money were given by the Institute, and about five o'clock all were seated under the trees, while the ladies of the Institute served a very substantial supper, supplemented by ice cream and home-made candy. The affair was most enjoyable and we considered the pleasure of the children ample payment for the undertaking.

As a further encouragement to the schools, we contribute annually to the Rural School Fair Prize List, as well as to our other Agricultural Fair.

We are looking forward to securing the co-operation of our School Board in the matter of Medical and Dental Inspection.

Last year we gave $25 to the Children's Memorial Hospital in Montreal, and also sent a box of groceries valued at $13 to the Children's Shelter in Renfrew.

This year, we are conducting our meetings according to printed programmes and find it very satisfactory, as it distributes the responsibility for the meeting more fairly, and having the programme gives each one ample notice, and time to prepare her share of entertainment.

To gain the interest of the young women, we made a public announcement that we would give a handsome quilt to the first girl who was married in our community, and have had the pleasure of handing it to one of our Institute girls.

Besides sending gifts to our boys while overseas, we held a very pleasant social evening to which we invited all the returned soldiers in the vicinity and all expressed themselves as highly pleased with the evening's entertainment.

In these and other ways, we endeavor to keep in touch with all elements of our community, our great aim being to avoid getting into a rut, considering monotony as fatal to the success of any undertaking connected with child-like or any other progressive work in a community.

Our greatest concern is, of course, the bettering of conditions relating to the children, realizing, with others, the inestimable value of child-life, and the wonderful possibilities wrapped up in these lives for either good or evil. We hope to be able in some measure to lend a hand in our small corner to remove stumbling-blocks from their pathway of life, and to help make their environment purer and cleaner, and better calculated to develop in these young lives, that which will make for an ennobled citizenship in the years to come.

DISTRICT REPORTS.

South Leeds.

That the Women's Institutes in the district of South Leeds shared with their sister branches throughout the Dominion both in war work and in the many branches of work which have opened up since peace was declared was shown by the reports of the several branches at their Annual District meeting in June. Although the influenza epidemic interfered seriously with both meetings and work during the fall and winter each branch accomplished a splendid year's work. The chief points of interest in the work of the branches since last fall might be mentioned.

At *Delta,* the Senior and Junior branches united in giving a supper and reception to the returned soldiers of that vicinity, presenting each with a scarf pin. Both Branches sent supplies and funds to the Belgian Relief and the Senior Branch also assisted the Children's Shelter and the Hospital for Sick Children.

Elgin has welcomed twenty-five or more returned soldiers and a V.A.D., presenting each with an address and a signet ring. This Branch also donated generously to the Indian Famine Relief Fund and bought three dozen chairs for the hall.

Seeley's Bay has presented drinking cups to the school.

Crosby Branch held a very successful bazaar (or miscellaneous sale).

At *Portland,* they profited by a Demonstration Lecture Course in Home Nursing and First Aid.

The *Newboro Institute* has obtained the use of the park as a playground for the children.

The *Westport* Branch has assisted many worthy funds—Belgian Relief, Salvation Army and Navy League, as well as the Brockville Hospitals. The District meeting was held in Westport and all visitors and delegates were most hospitably entertained—a large undertaking as the attendance was large. Our three youngest branches, Phillipsville, Morton and Lyndhurst are only a few months old but are reporting good progress, and each has held a successful entertainment. Phillipsville has the proud record of having the largest membership in the district.

The majority of our branches have adopted the plan of having yearly printed programmes. A few make out programmes for the year but dispense with the printing.

Several of the branches are using travelling libraries some also having Institute libraries to which they add from time to time. A number of our branches are in communication with the Department *re* Medical School Inspection which we hope to see carried out to some extent this year.

Most of the branches hold their summer meetings in the form of a picnic. At Delta, the Senior and Junior branches united for this purpose. Elgin and Phillipsville members also held a joint picnic at Elgin, and in October the Elgin members were entertained at Phillipsville.

Since June, 1917, our branches in this district have more than doubled in number, with increasing prospects for the organization of a few more Branches this year, so the Women's Institutes will no doubt make their presence felt for some time to come in the District of South Leeds.

NORTH RENFREW.

MRS. JULIA McLEAN, Box 30, Beachburg: At our District annual meeting held at Westmeath in June, our report showed then a membership of 179 from six branches. From June 1st, 1915 to May 31st, 1919, this district had raised for patriotic purposes $4,975.35 with supplies valued approximately at $7,050.65. a total of $12,126.00, though the amount of work was actually much greater for the reason that for a considerable time some of the Branches had co-operated with the Patriotic Societies, the latter being credited with the shipments. From the homes represented by these 179 women, there had gone to fight for king and country, as nearly as could be estimated seventy-five men, though the real number is undoubtedly larger. While the Branches had been so actively engaged with war work, they had not appreciably neglected the other departments of Institute work.

With the cessation of the war, and patriotic work along that line is no longer necessary, we adopted for our Motto, " For community improvement," and decided to devote our energies for this year to our immediate community betterment.

Westmeath branch is undertaking, with local assistance, the erection in their village of a Memorial Hall, in honor of the many brave lads who went from their vicinity to do battle—some of them to death for truth and justice.

Forrester's Falls is arranging for Medical and Dental inspection of the school children in their jurisdiction.

Lakeview is fortunate in having in its membership several good musicians and some splendid literary talent, which add very materially to the interest of their meetings. This branch recently served a chicken supper on the occasion of the laying of the corner-stone of the Memorial Hall being erected in Cobden. thereby realizing a handsome sum of money. They are arranging for Medical School Inspection.

Queen's Line, which has worked splendidly during the war, also is undertaking Medical School Inspection, and as usual is sending assistance to the Children's Shelter in Renfrew.

Beachburg has several lines of work in operation, including the proposal to assist in Medical and Dental School Inspection. Perhaps their most important activity at present is the opening and financing of a rest room and community building.

Locksley is a small branch of only twelve members, and owing to a great deal of illness in the homes, they were unable to meet regularly. Organized only a few months over a year they knitted 300 pairs of socks, made clothing valued at $85.00 and quilts valued at $25.00, which we consider a splendid record, and we are expecting larger and better things.

Zion Line Institute was organized in July and has a membership of twenty-three. They have contributed $18.50 for a bench in a soldier's home, and are placing a drinking fountain in their school. Their meetings are made social events, and at the close of the business are open to the men and young folks, and promise to furnish pleasant events throughout the winter evenings.

SOUTH LANARK.

MRS. W. G. CAMERON, PERTH.

Perth.—Raising funds for new Hospital to be erected in Perth.

Lanark.—Repaired and decorated Town Hall, at a cost of $1,200.00. Lanark Girls' Club raised $100.00 for same purpose.

Drummond Centre.—Raising funds to support a cot in Queen Mary Hospital, Toronto, for one year.

Poland.—Building a Community Kitchen for social purposes.

McDonald's Cor.—Donated Spiral Lounge to Soldiers' Civil Re-establishment Home, Toronto.

Elphin.—Took advantage of the Demonstration Lecture Course in Sewing and was highly pleased with the instruction given.

Watson's Cor.—Assisted in building sheds for a Community Hall, which is to be erected in 1920.

Fallbrook.—Organized in June (1919), has raised over $225 for a Community Hall.

Lanark Girls' Club.—Assisted in decorating Town Hall to the extend of $100.00.

Lavant Station.—Doing Community work.

Maberly.—Doing Community work.

After the activities of the war, the branches have turned their attention to community work.

A new feature of work which we are endeavoring to introduce in South Lanark District is Home and Social Club Work in connection with the Women's Institutes. Co-operation between the teachers and the Institutes in earnest endeavor to better the conditions now existing in many of our Rural Schools. This line of work will include the serving of hot lunch under the supervision of the teachers during the noon hour.

We hope that our women may see the need of Medical Inspection of our schools and apply for it at an early date. Our Public School Inspector is strongly in favor of the Women's Institute taking up this line of work.

At the Teacher's Convention recently held in Perth, our District President gave a very interesting and instructive paper on the "Need and Co-operation of Home and School Work" which was very much appreciated by the teachers present.

To finance the Women's Work, the Branches hold Garden Socials, Teas, Sales of Fancy Work and Home-made Cooking, and receive donations from friends, etc.

NORTH LANARK.

MRS. HAYES BOYD, R. No. 1, Carleton Place: The District of North Lanark comprises nine branches, two of the branches being in towns, the remainder in villages and rural centres. Our District annual meetings are always well attended. one branch alone sending over forty members.

Reports are given by *all* branches and the last four years the Annual Meeting has been an *all-day* session, the branch where the meeting is held serving luncheon to the visiting branches. This we find a very good plan (that is the all-day session) as it gives the members from all branches an opportunity of meeting freely and getting in touch with each other during the noon hour. We always have a programme outside of the business part of our meeting. At one of our meetings we had an address by a soldier, at another an address by the Superintendent of the Hospital, and we always have music.

In our *Carleton Place* Branch this year we had a School Fair in connection with the Horticultural Exhibition, eighty-six children having one or more entries. The cooking and candy were sold and the money realized from the sale went towards the prizes. We also served light refreshments and ice cream. At the series of Chatauqua meetings, which lasted one week, we had a booth, both afternoon and evening, the proceeds of which went to swell the funds of the Treasury.

Almonte Branch has done a great deal towards helping the local hospital, and the returned men.

A Girls' Institute, called the "*Janey Canuck*" has done good work in community work by repairing an old hall to hold their meetings in, and forming a Literary Society.

Hopetown Branch gave a reception to their returned soldiers and presented each with a "home ring."

Middleville Branch decided to improve their village by new sidewalks, etc., and raised money for that purpose by a festival in August and a concert the evening of their Fall Fair. They also purchased a piano for their hall.

Clayton gave $50 towards a recreation ground and four water tanks to the adjoining schools.

Cedar Hill Branch held a pound party in aid of the Ottawa Day Nursery and made donations of socks to the Home of Industry in Perth, and thirteen quilts to Day Nursery.

Pakenham raised $1,253 for Red Cross Work, and are only waiting for some new ideas from the Ottawa Convention to begin other work with fresh zeal.

Our officers visit the branches whenever possible and all work together, which makes for success. Our report at the District Annual Meeting showed a membership of 285, and the amount raised during the year $5,454.

At our annual meeting we always appoint our district representative and arrange for the next year's meeting which saves the expense of a meeting of the District Directors.

Western Ontario Convention

The Western Ontario Convention was held in the Y.M.C.A. auditorium, London, on October 28th and 29th, at which an unexpectedly large number of delegates were in attendance. A banquet was tendered by the city of London on the evening of October 28th, the Women's Canadian Club acting as hostesses.

The opening session, 10 a.m., October 28th, 1919, was presided over by Mrs. W. T. Mead, Blenheim. After the singing of the Institute Ode and the Maple Leaf Forever, the chairman said:—This is a gathering of women banded together to maintain their Canadian citizenship. The future of our country depends on our citizenship, and our citizenship is founded on the people we have in our land. Our motto is "For Home and Country," and if we are loyal to our motto, so patriotic and so wide in its scope that it embraces all that we hold sacred, we shall help to bring to Canada and Canadians a richer, fuller and broader life. For every man and woman in Canada to-day there is an opportunity to be of service to Canada. Could we send out boys and girls in perfect self-control, with sound bodies and minds, I am sure this old world would bless the mothers of to-day; so let us be diligent home-makers, that we may establish a nation of greatness.

REPORTS OF SOME OF THE BRANCHES IN ELGIN, ESSEX AND KENT.

Mrs. W. T. Mead, Blenheim.

Elgin, East	**8**	**Branches**	**Essex, South**	**6**	**Branches**
Elgin, West	**10**	**"**	**Kent, East**	**10**	**"**
Essex, North	**5**	**"**	**Kent, West**	**12**	**"**

Aylmer—This branch did splendid war work, and now has everything in readiness for Medical School Inspection.

Lyons—Gave $25 a month for four months after the Armistice was signed for Refugee Work. They always have interesting programmes and are at present discussing Medical School Inspection.

Rodney—The women of Rodney and New Glasgow are anxious to make a Memorial Park. The Alborough Old Boys' Association kindly gave over their annual picnic to the women, who provided a good programme and sports and cleared nearly $375. A splendid site of six acres with some trees has been secured at a cost of $1,000. A number of private donations have also been received, and it is hoped that a pleasant recreation ground for the people of the town and township will soon be in readiness.

This Institute is going to have a lyceum course of four concerts during the winter, the money to be used for community purposes, such as purchasing bulbs and plants for the cemetery and municipal building. An electric vacuum cleaner has been purchased to rent at one dollar a day.

Shedden—Since the war ended, the Institute members are knitting for Byron Sanitarium. They intend furnishing a ward in the Memorial Hospital, St. Thomas. They are assisting the Trustees and Inspector in securing equipment in the schools whereby the hot lunch may be served and in securing Medical School Inspection. The Institute has sent in a petition to the M.C.R., asking for a proper crossing at their station in the village, and that they keep their lights burning until after the last passenger train goes out.

Cottam Branch has a Sports' Club in connection with their Branch, which has proved a great success. They are planning to beautify their cemetery and are also interested in Medical School Inspection. Such subjects as "Township Council," "County Council," and "Provincial Government" are studied and discussed at the meetings.

Harrow Branch is planning a suitable memorial to the four brave boys who were killed overseas. Sixty dozen fresh eggs were sent to the Sick Children's Hospital, Toronto, and thirty dozen to the Military Ward at Byron Sanitarium.

Kingsville Institute is planning a memorial in the park for fallen soldiers and arousing interest in Medical School Inspection in the locality. A large flag and pole was bought for the town. The August meeting was held at the town park at the lake. Games and sports were held.

Clachan Institute is undertaking to raise funds to build a shed for the hall. Several socials and quilting bees have been held for the purpose of raising funds and developing a community spirit. Two boxes containing fruit, jellies and pickles were sent to the soldiers at Carling Heights. $25 was contributed towards a memorial picture of the soldier boys, to be hung in Clachan Hall. One meeting was held at the home of an invalid member.

Middlemarch took advantage of the Demonstration-Lecture Course in Food Values and Cooking. The secretary states: To this course we owe our Institute, for the women found meeting together was a great inspiration. Mothers and daughters alike found the instruction of value." They are now turning their attention to various hospital needs and reconstruction work, as they find it easy to work when there is a worthy cause. Leamington Branch has taken advantage of the Demonstration-Lecture courses in Domestic Science and Dressmaking and found them very beneficial. A second course in Domestic Science is being held. Eight rural schools and the town school are awaiting Medical School Inspection. Nearly 900 children will be examined.

The members visit the Union Sanitarium each month and take treats to the patients. They also sent canned fruit to the Women's College Hospital, Toronto. To raise money they have special evenings at the Lyric Theatre.

Malden is planning to improve the schools in the vicinity in many ways.

Botany held a contest to increase membership and added 143 members to list. They are interested in improving the cemetery.

Duart Institute made arrangements with the local doctor to inspect the school and hold a clinic following. This Institute has held school fairs for the last four years, and they are considered second to none in the Province. This last year the proceeds from the fair amounted to $150 in the afternoon and $100 in the evening. Four schools compete. This Institute also holds a field day in July.

Muirkirk—This Institute holds evening meetings from September to October. In July, they had Medical School Inspection and followed it with a Clinic. The result is that the health of all the children is improved and they study much better.

Highgate Institute is supporting a cot in the Queen Mary Hospital for Consumptive Children, and has made donations of money to the Sports' Committee of Byron. The members are now sewing for the Children's Shelter. A band was organized in the village this summer, and the Institute put on a social and cleared $200 for them. A library has been organized and the Institute is taking an active part in making it a success.

Bothwell contributed $60 toward the Navy League and $50 toward the Soldier's Aid; also purchased an invalid chair for the Byron Sanitarium and donated four large crates of vegetables and forty-two dozen eggs during the influenza epidemic.

Thamesville Institute is interested in the hot lunch for the rural schools and has held a meeting with the teachers and the trustees.

Palmyra Institute is particularly interested in the Demonstration-Lecture Courses. They held a Domestic Science Course and are now ready for Home Nursing.

Cedar Springs and West Harwich Institute has a membership of ninety, and the members meet in the homes. Ministers, lawyers and adjoining Institutes assist on the programme throughout the year. $500 was raised and used in various ways to be of service to humanity. $100 was given to educate a fine young returned soldier who had lost one arm. The members state that at their meetings they always learn something they did not know before and go home feeling benefited.

Dover Institute holds meetings in the homes of members. Printed programmes are made out. Roll call at each meeting is responded to by recipes, riddles or suggestions along various lines. The young girls take full charge of one meeting during the year, and it is found very encouraging and helpful to them. The members are interested in the hot lunch for the rural schools. Two or three adjoining Institutes give the programme during the year.

SUMMARIZED REPORT OF THE DISTRICTS OF MIDDLESEX AND LAMBTON.

MRS. J. G. DAWES, THEDFORD.

East Middlesex	8 Branches	**East Lambton**	15 Branches
North Middlesex	11 "	**West Lambton**	14 "
West Middlesex	11 "		

During the war the Institutes devoted a great deal of their time to war work. When peace was declared, it found them with material and money on hand. They made up material for refugees and hospitals, and donated money to different causes.

Harrietsville reports their last meeting a rally one, and are getting ready to do community work and Medical School Inspection.

Salem reports sending two dozen jars of fruit to Byron Sanitarium, twenty-three chickens to Mapleton canning centre, and thirty-nine boxes to boys overseas.

Ilderton is looking after returned men and gave $300 for a Memorial Park.

Keyser gave $55 to Byron Sanitarium.

Ailsa Craig is renovating the diet kitchen. They presented the municipality with a table and two chairs for the stage in the town hall; planted memorial trees at the school, and are preparing to help with a Community Hall.

Lobo reports good meetings with social hour. They sent chickens and money to Parkhill canning centre. The Prisoner of War Fund was turned into Hospital Luxury Fund for returned wounded men.

Komoka are making fifty pairs of pyjamas for Byron Sanitarium, and are buying drinking cups for the school.

Beechwood sent $25 to the Soldiers' Lodge at Carlington Heights; $25 to the Byron Sanitarium for fruit for patients.

Appin had a number of girls join this year. With the aid of a mutual improvement society, they are hoping to have a community hall. They take an active interest in school fairs. They made clothing and bought shoes and stockings for needy families in the village.

Mt. Brydges—They are supporting a French war orphan. They raise the money by selling ice-cream in the club room two afternoons and evenings a week.

They devote most of their time and money to a public library which the Institute keeps up.

All the Institutes in West Lambton are interested in Medical School Inspection.

Corunna is urging the County Council to prepare a couple of rooms for the insane, instead of sending them to the jail, before they can be sent to an institution for the insane.

Union reports taking steps to build a Community Hall.

Lucasville placed sanitary drinking tanks in each of the three schools. They are made of galvanized metal with covers and have taps. Each morning they are filled with water and kept cool and free from dust.

All the Institutes in East Lambton are helping to support a cot in Queen Mary Hospital, Weston.

Aberarder is very much interested in Medical School Inspection for the township.

Alvinston gave money for prizes at fair last year. Instead of an August meeting they had a decoration day in the cemetery, decorating the graves of departed members.

Arkona is still continuing the cemetery work. Through the efforts of the Institute, a very successful school fair was held at Arkona.

Forest had an Easter Egg Shower. They received seventy-two dozen and a barrel of fruit for the Military Hospital. They sold waste paper that was collected for $271.42. They gave $25 to the Canning Centre, Parkhill; $35 to the Armenian relief work, and an invalid chair to the Soldiers' Home, Toronto.

Shetland reports good meetings, and well attended. They are sending $35 that used to go to the Prisoner of War Fund to the Byron Sanatorium for comforts; $10 to the Toronto Soldier's Comfort Fund.

SUMMARIZED REPORT OF THE DISTRICTS OF BRUCE, HURON, PERTH AND UNION.

MRS. JAS. PATTERSON, GADSHILL.

Bruce Centre	7 Branches	Huron, South	6 Branches
Bruce, North	11 "	Huron, West	9 "
Bruce, South	5 "	Perth, North	6 "
Bruce, West	6 "	Perth, South	9 "
Huron, East	10 "	Union	3 "

Just before giving the report, may I be permitted to say that most of the reports as they came in to me gave a very full statement of all the money made and expended, and all of them stated that they were still doing a large amount of Relief work for Belgium, France, Serbia, and other worthy causes overseas. This part I have omitted, not because it is not appreciated, far from it, but because we must find our level in the reconstruction period of our fair Dominion. We shall, therefore, emphasize the work done in the community. As some one has said, "The war which has forced men to destroy life has taught women to value aright the work which conserves life;" hence, we find the mother heart in our Institute very active in the cause of the child. Then, too, we think of the Branches which were recently organized and others which are not strong in numbers. These have frequently said, "What's the use of sending in a report, it cannot come up to those splendid big reports." It is our wish that every Branch should have recognition at the Conventions. Your report, if not noted here, is because we did not get one. We would like to encourage every Branch to take up the work anew, and if you cannot do big things, do the little ones, and they will help to make up the sum total.

North Bruce District has been emphasizing work among the children, giving prizes for the best kept gardens, and exhibits of work at children's fairs, rewarding them also for essays on subjects selected by district officers.

Demonstration-Lecture Courses and Medical Inspection have all been of untold value and are truly appreciated. Tonsils and adenoids have been removed, defective eyes adjusted with glasses, and school-rooms redecorated, all for the betterment of the children. They will continue to raise money to spend on local needs.

Oliphant has been organized only two and a half years, in a small community, eight miles from the nearest town. Regardless of being much scattered, they raised over $500 the past year. The secretary writes, "We have caught the vision and are working for the good of the community."

Tobermory showed their appreciation to the boys who returned from overseas by presenting each one with a gold signet ring.

Wiarton is a strong Branch of some sixty members, very much alive. They had a Demonstration-Lecture course in canning, resulting in many filled sealers being put away.

The course in Home Nursing and First Aid last winter was the direct means of saving a child's life from drowning. When the doctors thought life was extinct, a lady (who gained her knowledge solely from the course) went on working, and to-day the child owes his life to a woman who had taken advantage of a Home Nursing Course.

The members of this Branch have taken in hand the beautifying of vacant lots, building fences and planting trees and flowers. Their ambitious aim is to provide and equip a cottage hospital for their town and surrounding country.

They have also helped families with money and clothing in times of sickness and stress.

Reid's Corners encourage the young girls in their Branch to demonstrate on biscuit and cake making. They have two good papers at every meeting, and draw out their members into taking part in the musical part of the programme. They have raised funds for the Byron Sanitarium.

Kincardine is raising funds for a hospital, and for a piano for the town hall by way of bazaars. They have contributed large sums to the Byron Sanitarium.

Allenford—They have a good attendance at all thier meetings, interesting programmes, and are not often disappointed by members absenting themselves from the meeting when they have the topic.

They have centralized their labors on the Children's Shelter.

South Bruce District has five flourishing Branches, that have done good work for convalescent soldiers and their dependants. They aim this year to extend the work by having each Branch assist in the organization of one new Branch.

The Branches are encouraged to visit at least one other Branch in the district and assist with the programme, thus getting better acquainted and often acquiring better business methods.

Problems of reconstruction are being efficiently handled by the Branches. Problems of health, wholesome recreation, and education are all gone into. They hope for Medical School Inspection over the entire district in the near future.

Teeswater Branch planted memorial trees in different parts of the town. They had a community concert, having the children of the different schools take part. Making raspberry jam for the Military Hospitals was a big undertaking. They picked the berries one day and met in the President's kitchen next day to finish it. Some eight or ten members turned out over 200 pounds of jam.

Walkerton Branch is made up of town and country women. They have difficulty in getting their members to take part in discussion at times, and have put on a series of debates to overcome this. One of the best programmes of the year was left wholly in charge of the younger girls. They are especially interested in the rural school problem, and have put on a rural school competition in co-operation with the Bruce District Representative. They are having printed score cards out covering the "Schoolhouse," "Equipment," and "School Grounds." Substantial prizes are to be given by the Institute. They hope to follow this up with Medical Inspection. They also have a good sum in the treasury towards a memorial for their fallen heroes.

Belmore gave prizes for darning and hemming done by the children under fourteen. They provided the seeds for the School Garden, resulting in the first School Fair this past year.

West Huron District reports a very successful year. They have not taken up any new lines of work as yet, but have encouraged their nine Branches to carry on.

Clinton sent donations to the County Children's Shelter; helped the War Veterans' Association to furnish their room; remembered the sick and shut-in with flowers, and sent fruit and pickles to Byron Sanitarium; had fruit shower for their town hospital, with a response of seventy jars.

Wingham reports a strong Branch. They have raised large sums through teas, donations, etc., and have devoted their time and funds almost entirely to patriotic work. They have also remembered the sick of their own community.

Londesboro and St. Helens devoted their time and funds to patriotic purposes most of the year.

Auburn—The members feel they are just getting back to normal conditions and have scarcely got started in any line. They have a number of young girls in their Branch. The society was helped very appreciably by the Canning Demonstration. They are interesting themselves in the schools and have put in wash basins, towels, and soap.

Goderich Institute responded to an appeal from the Children's Shelter for bedding and equipped three beds.

East Huron District are going ahead with organization. They recently organized a Branch, making a total of nine Branches.

They are interested in Child Welfare exhibits, keeping the streets oiled and beautifying cemeteries.

Blyth use the text-book "Our Government" at all their meetings. They give special prizes for exhibits at their Fall Fairs; co-operate with their local Farmers' Club in social affairs; take an emergency collection at each meeting to supply books and flowers to the indisposed; contribute to Women's College Hospital, Toronto, and local Children's Shelter. They are now raising funds towards their new Memorial Hall.

Bluevale—Bluevale members report a successful year. Many of their women were helped over a difficulty through attending the meetings. They, too, are interesting themselves in the betterment of community life, not forgetting their sick with flowers from time to time.

South Huron District is taking up extension work in earnest, and have organized three new Branches. Successful School Fairs have been held throughout the district. The need of medical inspection has made its appeal.

Exeter had the Community Park levelled and prepared for a recreation ground. They are making good use of the books, "Our Government" and "Handy Guide to the Laws of Ontario."

Crediton had a delegation of their members wait on the Township Council with a view to establishing a Community Hall. This matter will come up at the municipal election. They had their first school fair, and are going into the matter of medical school inspection.

Hurondale Institute is organized only six months. They have conducted a very successful School Fair and had a successful concert. A special feature at the concert was the auctioning of a lot of aprons made by the members, realizing some $68. They have a number of young girls in their Branch, two of them graduates of MacDonald Institute, who helped on the programme by demonstrating table setting and serving.

Zurich—Members are endeavoring to interest their School Boards in the hot lunch. They were instrumental in having school floors oiled, and stimulated the establishing of a library by giving a substantial grant towards it. They supported the School Fair, and are now making ready for a course in Home Nursing and First Aid.

South Perth District reports all their Branches holding excellent meetings. One new Branch was organized. The officers make a point of visiting every Branch at least once a year.

Mitchell Branch contributed to the Soldiers' Monument, to the Hospital for Consumptives, and remembered generously a local family whose home was destroyed by fire.

Goulds Institute, just recently organized. They have well attended, interesting meetings. They invited a neighboring Institute to meet with them at one of their meetings and also generously helped the fire sufferers.

Sebringville is interested in Medical Inspection and Community Halls. They have splendid programmes and live topics are discussed.

Listowel East Branch reports that they are striving to uphold their ideal, striving to do greater things for "Home and Country." They are increasing their membership at every meeting. They take a live interest in Township and School Fairs, and are endeavoring to forward the Hot School Lunch. Papers and open discussion results in this matter being favorably received. They have applied for Medical School Inspection. They are raising funds towards the upkeep of the Listowel Memorial Hospital, and have contributed to the Children's Shelter.

Milverton has delightful meetings. They say they are much in need of Medical School Inspection, as the local doctor examined a number of children and found conditions very bad. They hold their meetings on Saturday afternoon in order to have teachers with them.

Millbank Branch discussed rural school improvement and Medical School Inspection. They had a very successful garden party and raised funds to purchase perambulator chairs for the Soldiers' Home, Toronto.

Hampstead has a fine lot of young girls in their Branch, who have formed themselves into a Social and Entertainment Club. These girls take up the raising of funds by way of entertainments in various forms. A committee approached the Local Council in the matter of a Memorial Hall, and were favorably received, the matter to come up a little later.

Medical Inspection is the ambition of the entire township. Here the members are scattered well over the township, but the meetings are all well attended, some women driving eight to ten miles to get to the meetings.

NORTH MIDDLESEX DISTRICT.

Mrs. M. J. Dignan, Lucan: During the war the Women's Institutes of North Middlesex devoted a great deal of time to war work. Consequently when the armistice was signed many had a large surplus of money and material on hand.

This material was made up for the different hospitals and donations of money from different Institutes were used in the Byron Sanitarium for the purpose of renewing the diet kitchen and for the Hospital Luxury Fund for our returned soldiers. Many are using their money in making a Memorial Park; others are planting memorial trees on the school grounds; some entertaining returned soldiers; while others buy prizes for school fairs, and one Institute bought individual drinking cups for the children's use at school, and many of our Institutes are co-operating with the Council in building a Community Hall.

Nor are they overlooking the referendum. Each Institute is taking an active part in this good cause. In several a number of good papers have been given on temperance. At one of our local fairs a few members of the Institute erected a tent and wrote a mock ballot, showing women how to vote, and just here let me say that two members of the Women's Institute in North Middlesex are appointed to attend, as delegates, West Middlesex Convention to nominate a candidate for the Legislature.

No doubt you have all heard of the Canning Centre in North Middlesex, of which we are justly proud. It has been in existence for three years. The first two years were devoted mainly to Red Cross work, but this last year their work has been for the hospitals in Canada and community work. The latter has been successful beyond expectation.

In some parts they hope before long to have hot lunches in some of the rural schools.

One of our Institutes has for entertainment, during a social evening, a spelling or a geography match. This gives much pleasure owing to each member being able to take part.

Another thing which appealed to me was the spending of one hour a week with the children. During the cold weather this hour is spent in the Library Rest Rooms telling stories to them, and in warm weather on private grounds.

EAST MIDDLESEX DISTRICT.

Mrs. N. Anderson, Wilton Grove: In reporting Women's Institute work in East Middlesex I might say that in most of the Branches serious reconstruction work is only just beginning. During the summer months, meetings in the country are not as largely attended, and when they are they are more in the form of picnics and social gatherings.

However, there seems to be a strong and enthusiastic tendency to do something of real value, especially along school lines (medical inspection, sanitary and pleasant conditions, etc.), community problems, and all that sort of thing. During the months since the close of strenuous Red Cross work, most of the Branches have been publicly recognizing in more or less tangible ways the work of the returned men in their own district. However, the last reports sent in show a marked tendency to advance in all public-spirited efforts. Nearly every Branch has had in its community a School Fair, and the Women's Institute has been an outstanding support behind them. Also at the various Agricultural Fairs, the Women's Institutes have served dinner or had a booth which netted a goodly sum to be used in the community.

We have organized one new Branch during the year (Dorchester Station), and it promises to be one of the most flourishing.

WEST KENT DISTRICT.

Mrs. J. Fleming, Chatham: It is my pleasant duty to present to you a report of the activities in the several branches of the West Kent Women's Institutes during the past year. The closing year of the war will ever be remembered as our banner year, for the Branches had assumed a double responsibility. It seemed while the war progressed every possible effort was being put forth by the members to bring it to a successful end, and now since that end is accomplished the Institutes have not relaxed their efforts, but are pressing forward to help build up our nation, by building up our communities, which is in reality an expression of loyalty to our King.

For several months in the beginning of the past year the work of the Branches was greatly hampered owing to the epidemic that swept our land, nevertheless excellent results have been attained following health conditions becoming more normal. At present, there are seventeen Branches in West Kent and the membership is 640. Since the Red Cross work has been dropped, time is being given to appeals for aid to Children's Institutions, Military and other Hospitals, and many substantial sums have been sent to these, also clothing, canned fruit, and other necessaries.

Committees to visit the schools have been appointed in the Branches, and these are meeting with the hearty approval and co-operation of the teacher. Sociability amongst the Branches is being revived by the friendly practice of one Branch visiting another and providing the programme, also a list of the District Directors in West Kent, has been furnished each Branch, and they are invited by the Branches to attend meetings. In this way the Branches are more united.

Our District Annual is held yearly at the Children's Shelter, Chatham, a most beautiful residence that has been converted into an institution for the care of the homeless children.

In West Kent, we were proud to find the members working in conjunction with the Referendum Committee, and we feel that they have played no small part in the successful outcome of the temperance question.

Very recently, the Branches undertook to assist in serving meals at the International Plowing Match, held just out from Chatham, not merely as a remunerative scheme, but they felt it to be a duty to do so, and while it was most inconvenient for some to attend, they braved the elements and were on hand.

While we are busy with all these different activities, we are not neglecting our returned soldiers.

FLORENCE INSTITUTE, EAST LAMBTON.

Miss M. Drew: The work of the Florence Branch for the year ending May, 1919, was principally "war work." We raised during the year $890.61 and expended $591.89. Our boys from overseas began to return about the first of June and since then we have had a number of social events and presentations for them. Altogether we have presented nine men with purses of $25 each. In June our village and community gave a Welcome Home Banquet and presentation to four returned men at which our Institute assisted and contributed $32 to the funds.

In August at our annual township picnic held at Shetland, the council made presentations to about twenty men. Florence, Shetland, and Aughrim Institutes joined in banqueting about sixty men on that occasion.

We contributed $50 towards the expenses of a Boy Scout troop organized here in the spring. For some years past we have been greatly handicapped in our work by not having a suitable hall in which to hold public entertainments. The building formerly used was privately owned and sold for other purposes. Before the war started the Women's Institutes had started to raise funds for a hall, but when our war work commenced we used our money for that purpose.

An autograph quilt was started but laid aside under pressure of Red Cross work. This has recently been completed and we have made about $80 by the names. We wish to increase this to $100 and are now selling tickets on it.

At our Fall Fair, October 3rd, we served lunches and held a concert in the evening, clearing $100 on the day's work.

In May we held a contest for securing members and now have a roll of 123 names.

We make all our ladies over seventy years old honorary members, and the programme for one month of the year is given by the honorary members. One month's programme is also given by the young girls. We arrange our programme for a year ahead and have them printed.

At the Fall Fair we gave two prizes: 1st, $2; 2nd, $1, for the best essay on the "Province of Ontario" written by girls from thirteen to sixteen years old. Our Institute makes an exhibit at the Fair of sewing and fancy work or cooking every year, and receives a prize of $3. We try to assist in making our Fair a success and hope next year to be able to help with our Township School Fair.

PROVIDENCE BRANCH, WEST LAMBTON.

Mrs. W. C. Fleck: Our Red Cross Society was organized into an Institute on October 10th, 1918. We started with a membership of seventeen and have now thirty-five.

Owing to the epidemic of influenza, very few meetings were held until the beginning of this term. For a time, it seemed as if we must give up. But a few energetic officers took up the work and gradually gained footing. We struggled along from having five or six uninterested ones until now we have about thirty present at each meeting.

As you know, outside speakers draw, so we obtained outside help such as the Agricultural Representative from Petrolea to speak on the "Selection of Fowl;" the banker from Brigden, to speak on "Business Methods for Women." Neighboring Institutes were also asked to give the programme. At each meeting, one of our own members also gave a paper. Contest prizes were also given, such as cake, salad, pie, sandwich, etc.

Owing to such an effort to get life into our meetings and our treasury being low, we attempted little outside work. However, we did hold a School Fair, comprised of the three schools represented in one Institute. Each School Board gave a grant of $5 and the rest of the funds were furnished by the Institute. We charged the grown-ups 15c. admission, and had a refreshment booth, so managed to make our funds meet expenses. This was a splendid success and did a lot to interest new members.

We are to have a Home Nursing class this fall. We also obtained a Travelling Library, and are working on School Inspection.

I must not forget to tell you that in our early struggles we had a picnic and invited all the nearby Institutes (six in all) to join us.

Miss Sutherland: Many letters are coming into the Department from time to time asking for work which the Branches can undertake now that the war is over. It is rather difficult for us to say just what each Branch should take up; we can merely give suggestions and outline some of the activities which may be taken up, but it is for each locality to determine what activities can best be undertaken by them. You understand conditions in your locality much better than we do in the Department, and when we offer suggestions, it is for you to work them out to suit those conditions. I would like to ask if each Branch appoints a committee to visit the schools in their section?

Mrs. John Fleming: Yes; that is the idea, although in localities where there is more than one school section, they appoint a committee to visit each school.

Q.—When that committee goes to the school, what do they take up particularly?

A.—In our Branch we were just a little shy; we thought it might be infringing a little on the teacher's work, so our committee went about it very nicely.

They had a friendly visit with the teacher and found out what was necessary in the way of sanitary equipment for the school, and we found they needed wash basins and towels, because the children ate their lunches with soiled hands, one of the greatest carriers of disease. We also went into the question of providing games for the children.

MISS SUTHERLAND: In some of the smaller schools there are very few games that the children know how to play properly, and if we could give definite information and appoint some one to lead them it would do a great deal for our children.

MRS. FLEMING: We felt that was needed badly in some of the schools. Another thing we took up was the question of providing libraries with books suitable for pupils up to the fourth class, as we found a good many of the schools deficient in books for supplementary reading. We have committees appointed to select books for this purpose.

MISS SUTHERLAND: In regard to the District Annual Meetings, we find a good many of the districts hold an all-day session, while a few just hold an afternoon session. That does not seem to be sufficiently long to do all the business and have an address as well.

The District Annual is the place to discuss various subjects such as:—

How to prepare programmes.
How to make the monthly Branch meetings interesting.
How to increase the membership.
Methods of advertising.
Methods for raising money.
Methods of helping the young people in the community.
Committee work in the Branches.

If you have just one session, there is no time for that, in addition to having reports read and an address from a speaker, so I would strongly urge the holding of an all-day session in connection with the District Annual Meeting.

In Western Ontario two districts, North and South Perth, combined this year and held their District Annual Meeting at Stratford. They held separate meetings in the morning and a union meeting in the afternoon, when reports from various Branches in each district were read and an address given. The delegates from the various Branches of one district met with the delegates from the Branches of the other district, and a pleasant time was spent. That might be possible for other districts throughout Western Ontario.

MRS. PATTERSON: In advertising the summer meeting at Harrow, in Essex, they had sent out a little card to everybody in the whole neighborhood. Every woman who got that card felt that she was particularly invited to that meeting and would be made welcome; it had the name of the speaker and her subject. The church at Harrow was practically full of women as a consequence of that advertising.

MR. PUTNAM: At the Eastern Convention I made the suggestion, which was inspired by the splendid convention which we had; that they appoint a Board of Directors for Eastern Ontario. We in the Department feel the need of a more direct communication or connection between the Department and the various groups in the Province, so we asked Eastern Ontario to appoint three representatives to act with the three members of the Provincial Committee, and two persons appointed by Carleton County District Institute. It is understood that the Eastern Convention will continue to be held annually at Ottawa, and I take it for granted that the Western Convention will continue to be held at London. I would suggest that you appoint three persons in addition to your three members of the Provincial

Committee, and two persons named by Middlesex County, eight in all, who will be looked to to appoint committees to co-operate with the Department of Agriculture in planning for and conducting your annual convention.

Your committee of eight will elect a Chairman, Vice-Chairman and Secretary, with whom we can correspond direct regarding the work in Western Ontario. We in the Department recognize, that if we are to serve the Institutes to the best advantage, we must voice the wants and desires and activities of the Institutes in the district concerned. While we have a service of importance to perform, we recognize that it is the Institutes themselves which will make a success of the work.

Mrs. Neil Grant, Becher, presided at the afternoon session which was opened by singing The Institute Ode, followed by prayer led by Rev. H. B. Ashby.

ADDRESS OF WELCOME.

Miss Grace Blackburn, President of the Women's Canadian Club, in welcoming the delegates to the Fifth Annual Convention appealed to the women of the Institute in creating a new heaven—that is, a new ideal; and a new earth—that is, a new social order; for the former things are passed away. We stand at the dawning of the day.

REPLY TO ADDRESS OF WELCOME.

Mrs. R. T. Phillips, Lucknow.

While standing here looking at this assemblage of Canadian womanhood, there has come to my mind the story about a man who was one day looking at a dish of beautiful large ripe strawberries. He said, "God might have made a better fruit than the strawberry, but he never did." We feel like saying, "God might have made better women than those of the Institutes, but he never did." Now if this be true, and we believe it is, we hold an exalted position. Let us see to it that our banner always floats foursquare for all that is good and noble and for the uplift of our fellow beings. A wonderful opportunity has come to us of ridding our nation of many harmful and hurtful things. Since the ballot has been placed in our hands let us show to the world that the ballot in the hand of a woman is a blessing to humanity.

As I look into the faces before me—eager, intelligent, womanly faces—I feel that the influence of this Convention will be far-reaching. So many with pencil and paper, ready to take down gems of thought expressed by those who speak from this platform, and the knowledge and information thus gained we will take back with us to the different Institutes which we represent. Let us take back with us as much as possible of the zeal and enthusiasm of the Convention and weave it into the reports which we will give to the Branches.

We are a band of busy women who pause in our work for a little while to gather here. What for? To enjoy one another's society and for a little recreation? Yes; but that is not all. We are here to learn, if possible, ways and means of bringing about better conditions in the home, the school and the State. The homes of a nation are its strongest forts. The President of a Ladies' College once said in an address, "Nature has given to women the highest place in the realm, the first privilege of instilling the principles of love, justice and truth—love for nature and all God's creatures; justice to do as we wish to be done by; truth, the standard of right which instils those principles which make statesmen, patriots, and noble men and women." It is Ruskin, I think, who says, "The reverence for the law should be breathed by every mother to the child who prattles on her knee." It ought to be taught in the homes, schools, colleges and from the pulpits and Legislative Halls of our land. If there is one thing more than another that we as Institute workers stand for, it is the welfare of the child in the home and school, and the making of laws to protect them will now be within our power. Of course, we know that all women have not that high standard of morality, and while we have such mothers, we will have juvenile recruits to fill the ranks of poverty and crime. It is our duty to try by precept and example to help such women to better living. The years of war, with their bitter experiences and sorrow, have brought about great changes in our beloved Canada. It would almost seem that there had come a new Canada with world-wide relationships and responsibilities.

What kind of a nation will this Canada be? The answer depends to quite a large extent upon the women. Our motto, "For Home and Country," is surely an appropriate one. In former years, we made much of the home and home life, little dreaming how soon we would be called upon under very trying circumstances to show our loyalty to our country. We are very proud of the positions we have attained through our prayers, our sympathy, and our work. Let us resolve to make the most of the opportunity which our position and influence gives us to keep our homes and home life inviolate against anything that would destroy its sweetness, purity and sanctity. All honor is due to those who have been the leaders of this organization in the past and who have brought us to the crest of the wave of fame.

FOR HOME AND COUNTRY.

For Home and Country, magic words,
That thrill the heart like song of birds,
No dearer words to those who roam,
Than Native land and "Home Sweet Home";
Beloved in childhood and in age,
Prized by the simple and the sage;
No cot so humble, land so bare
But some heart turns with longing there.

No silken banner e'er unfurled
A nobler motto to the world;
The chosen motto of our band,
The pride and hope of native land;
A bow of promise and of cheer
That time will purer altars rear
Within the home, from which will rise
The incense of self-sacrifice.

For broader, higher thoughts have sprung,
And grander, truer notes are rung
Since woman has awaked to find
The niche in life for her designed;
A niche no other power can fill—
Since 'tis for her to sow and till—
To sow with careful hand the seed
From which may spring but noble deeds.

As mother, daughter, sister, wife,
To smooth the rugged ways of life,
To guide the tender, trusting feet
In sunny paths, life's cares to meet—
For her to make our lives worth while,
To dry the tear, to wake the smile.

Yes! Home is woman's true domain,
But quite too long has hidden lain
Her powers, like mines of golden ore,
Waiting the hand to ope the door;
Or seeds, which wait the sower's hand,
To spring and beautify the land.

Mrs. G. EDWARDS read words of greeting from Mrs. H. A. BOOMER, President of the Local Council of Women, who, through illness, was unable to attend the Convention.

MEDICAL SCHOOL INSPECTION.

DR. MARY MACKENZIE SMITH, GRAVENHURST,
MEMBER ONTARIO SCHOOL MEDICAL INSPECTION STAFF.

This work was started some few years previous to the war, but in 1916 we started the work in a more agressive way, and altogether under the auspices of the Women's Institutes. I want to give you just a brief outline of the work done under your auspices and what we were able to accomplish.

In looking over the reports, I find we examined nearly 26,000 children in the different parts of Ontario, and operated on nearly 1,500 at our clinics. Now, we would not have been able to do this work if it had not been for the hearty co-operation that the Institutes gave us, and the interest they took in the work. The first work was started in 1916 in Gravenhurst, and that year we were able to carry out three clinics there, and following that, there were more applications received for the work to be carried on than could be handled. I examined probably 11,000 of these children myself, and the Women's Institutes handled the entire transportation throughout the work, and only on one occasion did I miss being taken from one school to another, and that was through the fault of a man. Two or three of the ladies were always willing to do the clerical work in connection with the examination, and the Institutes always had meetings of parents and trustees to see if we could carry out our clinical work after the examination had been done.

Many parents do not realize that their own children require medical attention. When I was examining in Hastings County a woman came to me and said, "I have three children, but I do not think there is anything the matter with them, although I know there are many children who need to be examined." When her children came to be examined, we found them to be in a very bad condition. One boy had diseased tonsils, a very bad condition of one lung and leakage of one valve of his heart, and furthermore the child had three permanent teeth that were decayed. I asked her when she had had this boy examined before, and she said, "Last year, but he had the 'flu,' and was sick with rheumatism." I said, "Did the doctor not tell you that his tonsils were bad?" "No," she said, "he did not." "Did he not tell you anything about the child's heart?" "No, he did not." "Did he go over his lungs?" "No." I then asked how the boy had been during the summer. She said, "Fairly well, but he does not like to play, nor is he as active as he was before." I am not blaming the rural physician, because during the "flu" epidemic, the rural physician had more than he could do, and he did not have time to go over the hearts of all his patients. Since the time of the influenza, our percentage of heart and lung cases have increased at least three to five per cent.; in one locality it went up as high as nine per cent. In one school we had something like fifty children who had to have special attention for the lungs, and over forty of these received preventive treatment for tuberculosis during the summer.

I told this woman about her child, and she said, "When I thought there was so little the matter with my child, there must be many others who need care and attention." That is one of the reasons why we need medical inspection of the schools.

Another reason why we knew that medical inspection was very urgently needed throughout the country was that 50 per cent. of our men when examined for military service were found medically unfit to go overseas. In the United States, the percentage was very much higher than that. Many of these conditions could have been prevented if the men had received treatment in childhood, and perhaps that is one reason this work was started during the years of the war.

The work grew too large for the Institutes to handle, and our Superintendent, Mr. Putnam, with our reports in hand, saw the Minister of Education, so that the Department of Education took over this work in May, under Dr. Waugh. But I want this to be understood: I feel we could not under the Educational Department, nor any other Board, carry out our work effectively without the co-operation of some organization, and we find the Women's Institutes the best to work with. I feel our inspection work would lose a great deal of the good we want it to effect if there were no follow-up work done. If we merely sent reports to the parents, and left no organization behind to carry out the work, the inspection would be almost fruitless.

Then we find the schools are almost devoid of proper ventilation, and the seating is injurious to the child. Eighty per cent. of all the schools, or even higher, have improper seats for the children. The seats are not placed properly and they are not the right size. In one school, in Simcoe, I measured the children, and there was a difference of between one to one and a half feet in the height of the largest and smallest child, and yet every child was seated on the same sized seat, and when I spoke to the trustee (this is not the usual attitude of trustees, as I find them a splendid body of men to deal with) he said, "I went to that school, and these seats were good enough for me and they are good enough for my children." I said, "How long since you went to that school?" "Forty-two years." "Are your barns the same that your father had forty-two years ago? Is the ventilation the same, and the heating and the lighting the same?" That was different. And this school had not been redecorated for twelve years.

When I think of the sanitation that I see in some of these schools, I am appalled. I asked some mothers to go out and see this sanitation, and they told me they did not like to go—did not like to see where their children had to go every day of their school lives! A woman may not realize all the conditions in the schoolroom, but she does know that bad ventilation is not good for her child; she does know that poor heating and poor seating is injurious to that child. I find children sitting on seats too high for the desks in front of them, where the seats are high at the back of the room and low at the front. Then some of the seats are too far away from the desks, and the children have no support for their back whatever, and all the pressure of the weight of the body is on the ribs, giving us that flat chested condition that we find, with the shoulder bones and collar bone out of conformation.

Another thing I find is that the seats are too high for the small children, and unless they sit on the edge of the seat, they cannot touch the floor. We know ourselves how we dislike to sit on a seat too high; we know how uncomfortable it is, how quickly our feet get cold, and when a child sits under such conditions, a bad arch is formed. The ligaments are stretched beyond what they can endure, and we get a falling of the arch. Our trustees are willing to remedy the seating conditions as far as they can. I find in many schools there are only one or two or three sizes of seats, and yet the children range from 3 ft. 8 inches to 5 ft. 10 inches in height, and you can realize how different the seats should be, and how they should be placed to accommodate the different sized children.

Ventilation.—I have talked to the children about ventilation. They understand that we can only live three or four minutes without air, and yet how little we think of the ventilation of the schools. It is too cold for the children to have the windows open all the time, and I do not find one teacher in ten who opens the windows at recess. In the open-air schools, we find children can do better work in a half period in the fresh air than they can in a whole period in a closed room.

Decoration.—There are very few women who would leave it to their husbands to choose the paint for their kitchens or the paper for their best bedrooms, and yet the decoration of the schoolroom is left to the men altogether. If you could see the greys and greens and reds on the schoolrooms, you would think they had not much idea about that work. The women should take more interest in seeing that the schoolrooms are decorated attractively, and that there is proper lighting, with blinds on the windows to cut off some of the light but not all the light. In some schools, we find curtains on the windows as well as blinds, and the room is so dark it is difficult to see. There is work enough in the schools of Ontario to keep every Institute woman busy for a year or more. If you get new schools, see that they are properly lighted, ventilated, and heated, with a basement where the children can go on a rainy day.

In regard to the inspection work proper, I went to the Teachers' Convention in Wentworth, and many of the teachers got up to tell how different the children were and how much better they were in their studies since they had had their tonsils removed or their other defects remedied. At the West Hamilton Clinic, there was one child who was very hard of hearing; he could hardly hear the teacher in school at all. His mother asked me if having his adenoids removed would help his hearing, and I said, "I am perfectly sure it will." An hour after the operation I said to him, "How are you?" He said, "Fine, I can hear you." I was back almost three months later, when his mother came to me and said, "If you had done nothing but help this one child of mine, I would feel your work had not been a failure." That boy could hear as well as any other child in the school. We teach the children what adenoids will do, and I have had children come and say to me, "I have adenoids; I know because my teeth project," and they would be glad to have the adenoids removed, and try to breath afterwards through the nose.

I wonder if you ladies realize what condition the teeth of our children are in? I find 25 per cent. of all children have lost permanent teeth, and I find only one mother in 500 who knows that a molar in a child of seven is a permanent tooth. Parents should realize that the child's first teeth were given to masticate his food for the first seven years, and should be taken care of just as long as possible. I was in India for six years, and if I had examined 20,000 girls and boys, I would have found very few bad teeth, because the children are brought up on plain food. Children born in Russia and the Eastern countries have firm, strong teeth, because these people eat coarse bread and drink milk. In the inspection work, I can pick out a child that has been given milk to drink and the proper food to eat in ninety-nine cases out of one hundred. Our children are given these breakfast cereals that are just like shavings, and they are not getting the food value they should. We should study the Food Reports and Food Values given by our Department, and realize what it means to the child. I think the time is coming when it will be a crime to have a sick or an under-developed child. A man will never buy a horse with decayed teeth, and yet some parents will never look into a child's mouth to see if it has decayed teeth. I have looked into the filthiest mouths of children in our schools, and yet they come from good families. I would rather have a child with a dirty face, than with dirty teeth, because there is no injury to him from a dirty face. There is plenty of work for the Women's Institutes along this line.

The children are not afraid of our inspection. I went into a room with sixty children in the first book, and although one little fellow thought I was going to pull his teeth and vaccinate him, he was not afraid. In all the work I have done, I have never found more than ten children who have cried at the examination, and then there are some children that would cry if you looked at them. The little ones love to be examined, and if you forget to examine their lungs, they will say, "You forgot to telephone on me."

Where the Institutes ask for the inspection we go there first, otherwise we come to you in your turn. We will inspect the whole Province.

Dr. MacKenzie-Smith then gave demonstrations in showing how to give the patient a bath in bed, changing the sheets while the patient is still in bed, and the hot foot bath.

The City of London tendered the delegates to the Convention a dinner in Smallman & Ingram's Tea Rooms, where the tables were tastefully decorated. The Canadian Club acted as hostesses, Miss Grace Blackburn, presiding. Splendid addresses were given by Rev. Mr. Ashby and Col. Graham, and in the absence of the Mayor, Mrs. Somerville gave a few words of welcome to the delegates. Mr. Putnam, Mrs. Alfred Watt and Mrs. Todd responded on behalf of the Institutes.

Mrs. Wm. Todd, President Provincial Federation, presided at the evening session, which was preceded by a half-hour's song service. During the session, musical selections were rendered by Mrs. Wheeler of London.

Dr. G. C. Creelman, President of the O. A. C. then delivered an interesting address touching on many topics of rural interest.

THE CHAIRMAN: We have with us to-night one whom we have come into the habit of calling Mrs. Watt of England. I would not introduce her as Mrs. Watt of England, but rather Mrs. Watt of Canada, Wales, Scotland and England, one of our own Canadian women who founded in the Old Land the Women's Institutes as a war emergency measure for the production and conservation of food, and last year the Government voted $60,000 to the work for one year.

THE INSTITUTES OF GREAT BRITAIN.

Mrs. Alfred Watt, M.A., M.B.E.,

Founder of Women's Institutes in Great Britain.

The need of the Women's Institutes Schools arose out of certain definite things; in the first place, the policy we had in regard to Women's Institutes; I had laid down from the outset that only trained women workers could organize Women's Institutes. As we had no trained women workers, it was somewhat of a superfluous denomination, but we must have an idea in order to work it out, and that was one of the earliest things I laid down. In the second place, another axiom I laid hold of was that the Women's Institutes were a technical organization, having a technique peculiar to themselves; that the Women's Institutes must be formed and consolidated and carried on in order to be successful, and that that technique must be learned by those who intended to form and carry on Women's Institutes.

When the Women's Institutes were taken over by the Government, which was in the second year of their existence (which was very quick for the British Government) a tremendous demand arose for speakers for Women's Institutes, and we had not the speakers to send, and keeping in mind my first axiom, we were in very great straits. There was far more enthusiasm in the country about Women's Institutes, than we were able to direct in the lines required.

Then a need arose out of another part of our policy, namely, that the individual Women's Institute was the only thing that mattered. In order to have a movement of any strength at all, each individual Institute must be the very best that it could be. As the Institutes were all new (the first of them was formed only in 1915, in England) it meant, in order to have them successful, there must be women teaching them how to form them and carry them on. Then the need of the schools arose, out of a personal feeling of my own, namely, that I could not stay very long in England. As soon as the war was over, I knew I should like to come back to Canada as quickly as I could, and therefore, it behooved me to put the movement on as sound a basis as possible, because nothing would be more disastrous to the Women's Institutes of the Empire than to have those in England fail. So a great need grew out of these conditions for some specific training of Women's Institute workers.

At first, there were different methods used to train the workers. I would take them about the country with me, and then get some of the presidents to take them and train them. We would sometimes bring them to London for various conferences and so on, until at last I hit on the idea of Women's Institute Schools. Like many other inspirations that we had, it came very suddenly to me that this would be a good thing to do, and once having got the idea, I was, like many other obstinate people, very reluctant to give it up, so I had to work the idea out and try to present a scheme to the Government which they might consider.

The first school was held in Sussex County; there were 100 Institutes in that county alone. I had a number of very good friends in that county; I called them together and asked for their help in getting out some plan which we could present to the Government for their approval. After some considerable consultation among my friends, they made several very delightful offers to me. In the first place, one of the presidents offered to give her own house for the school; other members offered to entertain those who should come to take the training; others again offered to help with the lunches and so on that would be necessary. Different Institutes around the county offered their meetings as sort of experimental places for such a school. Finally, I was able to go to the Government and suggest that they should hold schools under my direction for the training of Women's Institute organizers and lecturers (which at first was the idea), that the County of Sussex would undertake all the hospitality, that the school could be held in the house given for the purpose, and that the only expense to the Government would be paying the railway fare of those who should come to the school. That I thought they should do in order to make the selection of those who could come. The British Government is a very logical Government, and they saw the force of that at once. I sprang it very suddenly upon them; I did not give them six months to consider it. I said, "This offer is only good for the next two weeks," and if I never did anything else in my life that had any brilliancy about it, that suggestion had. The idea was received with considerable enthusiasm until they came to that part of my report, then it waned, but with that fine sense of duty that is common to the British, the Department of Women's Institutes decided they would let me try this school as an experiment.

The school was a great success. Although many features of the work had to be dropped subsequently, still on the whole, the same ideas prevailed throughout the other schools which we carried on. It was an instantaneous success and recognized as such by the Government. We used nearly all the Institutes around for experimental purposes; we visited them on various days, and then we had others visit the schools, criticize their meetings and draw their own conclusions. Those that were good were used as object lessons; those that were new were used to illustrate the kind of help needed in the early years of their existence, and they were willing to be the horrible example because of the benefit the people were getting.

After the Sussex School, several other schools were started, until I was able to more or less standardize the instruction given at these schools.

One school which I want to speak of at some length, was held at Wye College in Kent, a place no doubt known to many of you as one of the Agricultural Colleges in England. The Government sent out invitations to different people to attend that school; this school was chiefly for those who were to form, carry on and teach how to carry on Women's Institutes. The Government invitation stated that the college would be held at such a date, that an attractive programme had been prepared, and that the Government would pay the return railway fare of those who attended, but those who wished to stay in the college would have to pay their own board and lodging. With the invitation a programme was sent to those whom the Government invited to take this course.

The way we got the students was this: Every County Federation, which more or less corresponds to your Districts, recommended workers within their own borders whom they would like to take this course of instruction.

On the programmes, I wished to have some folk songs and dances and some demonstrations in handicrafts, and so on, in order to vary the instruction in the school, but the Government said that would not be dignified enough for the Board of Agriculture. They did not mind me having them, but could not put them on the programme, so we had to have these on a separate sheet.

This school was for training those who would work under the direction of the Government, although a number of other schools were held just for Committee Members and Presidents and Secretaries of Institutes. At the very outset, this particular school was opened by the Principal of the College, and in his address he made a very telling remark; the school was held at the conclusion of the war, and he pointed out, perhaps not quite so many avenues of activity as Dr. Creelman has pointed out to-night, but a great many, and in the end he said, "The ball of opportunity is at your feet—play the game." Our first lesson at that school was on the history of the movement; we began with its history in Canada, right at Stony Creek, which is just as well known in England to-day as in Canada. Then we went on to the history of similar movements in all portions of the United States, and then to the history in European countries. We were all surprised to find that similar organizations to the Women's Institutes exist in almost every civilized country on the face of the globe. One of our members made a special study of this and had translated a number of leaflets and Government reports of Women's Institutes or similar organizations in different European countries. The Martha Society in Finland was the one that seemed to us most like the Women's Institutes. We always took up the history of the movement in the British Isles as well, although that history was new and consisted only of three years, yet we felt it was well that our workers should understand what difficulties had been encountered in starting the movement in Great Britain. You can only value a movement when you know how it has been fought for.

Then we went into the economic aspects of the movement, and we had some interesting discussions on its effect in the British Isles. Then we had economic councils of Women's Institutes, and papers and discussion on them—what were the aims and ideals of the Women's Institutes, what were their methods of work, and in what points was there similarity between the Women's Institutes in England and other countries, and in what points were there differences? In the end we found the aims and ideals were similar, the efforts of work were similar, and the same ideal could be found in every country, and I think that is a guarantee of the permanency of the Women's Institutes. They can be used on the Prairies of Canada, in the small holdings of Wales, in the academic villages and towns around the universities of England, in such countries as Prussia where women have had such a little chance of development, and in such a country as Finland where one would not expect to have such a democratic organization among the women.

At this school, we had a very good reference library available. We had reports of the Ontario Women's Institutes from the beginning, which Mr. Putnam kindly sent me, and we had reports from almost all the Canadian and American Provinces and States; also a great many copies of the *Canadian Home Journal* and different American publications. Between sessions, the students who were there were expected to study and familiarize themselves with the reports of Institute work in other countries. We also had lists of books which were of service to Women's Institute workers and members.

At the close of the first day we had some lessons in folk songs and dancing, and although some of us were past the age when we were supposed to take part in dancing, I do not think any would have missed the end of the programme.

In the evening, we had lectures from some of the college professors on subjects of particular interest to Women's Institute members.

Another day we had a lesson on propaganda. From the very first in England, how to get more Institutes was a very marked feature of the work. We had definite lessons on what people should say who were propagandists; what education they should have; how they should behave when they went to a village. We went into this at Bangor School with very particular emphasis. Bangor is one of the foremost universities in Wales, and at the school held there, we had very much assistance from the professors on the characteristics of the Welsh villages, and we all took that as the standard of our propaganda work. It revealed to us the sort of students we should be before we went to a village to organize; we ought to know the characteristics of the people, what had influenced them and what was influencing them to-day; we ought to realize what the sentiments in the place were; we ought to know the landscape and the soil, and you may be sure by the time we were told all the things we ought to know before we went to a Welsh village, we were in a very humble mind indeed.

I think we would all do much better work if we made this conscientious study before we went to any locality; we would win the affections of the people and put our movement on a better basis if we took the trouble to familiarize ourselves with what was influencing the people in the community in which we would work.

We also had demonstrations in different sorts of handicrafts. In England, the Institutes have gone very much into industries of all sorts, and we had available in our classes, through leaflets, information on toy-making, on flower craft, on basket making; growing of oziers and rushes, and all village and home industries. At the school we had a teacher in basket making, in spinning, in weaving, in hemp tying, in soft toy making, in the making of model cottages and dolls' house, boot mending, household repairs and so on. I have a picture here of one of our famous soft toys, the famous Cuthbert, and a picture of a group of toy workers; the youngest in the group is eighteen, and the oldest eighty, so we are getting all classes and ages into our industries, and very good jobs they are making of it.

We visited the college farm and buildings and different points of interest in the neighborhood in order to break the monotony of the instruction work and give us some idea of the historical value of the locality, because we always believe that making the most of every locality means a great deal to Women's Institute work.

We also had lessons on the formation of Women's Institutes; we standardized the instruction to those who would form them. We said we did not care how they formed a Women's Institute, as long as they got one, but if we were going to say certain things, we should all say the same things, and therefore on certain essential points we would be agreed. One bright member, Mrs. McLeod, hit on the idea of getting out fourteen points relating to everything a lecturer or speaker should do when she went to a locality to form an Institute: How to prepare yourself before going; how to stand; how to deliver your address; what to do with a chairman's introduction when it had not been a very pleasing one; and how to dispose of the tiresome people in the audience when they were contradicting you; how to win audiences; how to speak clearly and distinctly and put through the resolutions; how to elect committees and instruct committees; how to get your officers and inspire them, and how to leave the place all happy and uplifted and ready to carry on the Institute to a successful conclusion. That is technique, and we went into it as a technical subject.

To do that, we compared the methods of a great many organizers. When we had criticized and compared, we picked out the best methods and showed why they were used.

We also had lessons in how to consolidate an Institute. I always told an organizer that you cannot form an Institute in one meeting; you must go back some months later when the people have an idea of what an Institute is, and find out what things you forgot to tell them, and straighten out the things which you told wrong. We called these consolidation visits. As an object lesson, we went to a village in the neighborhood and formed an Institute; the next day we consolidated one, and on the following day we spent a good deal of time in criticizing what had happened at these village meetings. I always found they were much more ready to point out faults than what was praiseworthy.

Our next lesson in the regular course of instruction was how to run a successful Women's Institute. I suppose everybody in this room has an idea of how to run a successful Women's Institute, and I am not going to give you my ideas. When we had special schools for presidents and secretaries, we had a great many heart to heart talks on that subject. We asked, "What is the standard of success? Is it large numbers, or the work accomplished or the spirit that is there?" And we all agreed that one thing that mattered was not how many members an Institute had, but how many members attended the meetings, and how many members took part; and the really important thing was not how much money they raised, but the good feeling that was engendered among the members, and what part the Institute played in the community—the spirit of it, that was much more important than the actual achievements which they might effect.

The making of programmes, in the running of a successful Institute, we considered of very great importance. We had programmes from the Women's Institute Centres which are in the market towns, and we had programme covers which were for the whole county. On the programme cover for the County of Sussex was the Sussex Coat of Arms, and inside were the programmes of every Institute in the county. We had several specialists in England who gave very good papers on the making of programmes and all it entailed; sometimes a whole morning was spent at the schools on how to get out a successful programme, so that I think the English Institute programmes are quite the most beautiful that could be conceived by any Institute. They are varied and full of interest. I do not see how anybody could stay away from any Institute meeting after they read the programme.

But we always pointed out that the making of a programme and the carrying it out are two separate things. Once a committee have gotten out their programme they seem to think their responsibility is ended. We always made it a definite point, that after the programme was printed, it should be carried out as stated and carried out successfully.

We had another lesson on the procedure at meetings, which involved what the president should do and how the meeting should be carried on. We got out a leaflet by the Chairman of our Federation, Lady Denmore, on procedure at meetings which any of you may have if you wish.

My own Secretary, Miss West Lloyd, got out a leaflet on the duties of the Women's Institute Secretary, which I think is the best thing of its sort I have read.

We also had lessons to presidents of committees, and on the duties and privileges of committees, and I must say we never spared a committee, because I do think committees are of much more importance than the officers themselves.

Then again, we had a great many lessons on the little helps at meetings, the sort of thing that went to make an Institute successful, such as the roll call. We had a lesson on the roll call, how to carry it on and make it a great feature of the meeting; the best kind to have and just what the obligations of the president and secretary and the committee were toward the roll call. The same with the question box, exhibitions and competitions, songs, every little thing that went to make the Institute meeting a success, we carefully went into.

We also had talks on how the central organization was carried on; how the county federations were formed and how desirable it was to have them. We always had among our members, people who were schooled in that sort of thing, because English people are schooled in matters of procedure and organization. In fact, I thought they had too much organization; I think they will always think of Canada as being a place without organization because I made such a fuss against organization.

The last day of the school for organizers we devoted to the organizer herself. I always conducted examinations, both written and oral. We had a public speaker come the last day and give us lessons on public speaking, and she took me for the horrible example in telling them how not to speak.

Then we had lessons on teachers and instructors and at the very end we usually met with all the organizers who had been trained and chose an organizer for that particular locality.

These schools were enormously successful; the attendance was remarkable; at some of the sessions at a school we held in Sussex there were as many as 500 people present, and they had all come from long distances, and members who were not invited by the Government had to pay their own expenses. The personnel at these schools was also remarkable; we had some of the highest in the land and some of the humblest. We had women whose husbands were in every sort of occupation, working women, farmers' wives, doctors' wives, peeresses—every section of the community was represented, besides a great many young girls.

I pointed out to the Government that under existing conditions it did not seem possible for very poor women to come to the schools, and I asked if they would quietly pay the expenses of these working women, such as probably the wives of agricultural laborers and so on, without letting it be known so that they could come on exactly the same footing as the others. I found then, as always, that any request that one made to the British Government which stood for fairness to the whole people was always listened to with the greatest attention, and they sent these women to the schools.

In a short time, I had seventy-eight trained Women's Institute workers, and at the school for presidents, secretaries and members of the committees, we must have instructed several thousand members of the Women's Institutes.

The results were most marked in Institute work. One could always tell when one went into a community whether there was a trained worker there or not. In Belgium they have no Institute schools, but every teacher who goes to the Government Normal Schools must take training both in Agriculture and Domestic Science, so that every community has at least one trained woman in the person of the teacher of the Government School. They understand the value of the trained mind in a neighborhood. We wanted that in England—one trained person at least in every community who was specially trained in Women's Institute work.

The Government said nothing had given such satisfactory results as these schools, and they will always look after the Women's Institutes schools. They are to be inaugurated in Belgium in imitation of the English idea. I feel myself if it had not been for the Women's Institutes schools I never would have gotten away from England; I would have been afraid of the movement collapsing as soon as I came away, because no movement is on a sound basis which does not look after itself first. We are so anxious to help every other organization, we are apt to forget we must first be efficient Women's Institutes. I feel now the movement is on a sound footing, and whatever they branch out into, they are sound to the core. However badly they do this or that, they are on a sure foundation; they are making themselves a real centre in every community and they are becoming a great power. I do not think in the whole of England there is any such power; in the rural communities I know there is no such power as the Women's Institutes, although the oldest Institute is only in its fourth year.

WEDNESDAY MORNING SESSION.

Mrs. Hugh Wigle, of Essex, presided.

IMPRESSIONS OF AN INSTITUTE LECTURER.

Miss A. H. Clayton, Listowel.

When I think of the Women's Institute Convention, I think of what my first impression was when I went into the Technical School last February and saw that wonderful gathering of women from all parts of our Province. There were two words which impressed themselves upon me, at that convention, and these words were: Hard Work and Achievement. I think there is no woman who calls herself an Institute worker who does not represent good hard work of one kind or another, and good hard conscientious work always means accomplishment, and these are the things that the Institutes have stood for, and for which they must stand more than ever in the days that are to come.

Looking back over the past it seems that before the war the Institutes were much like children in the home, and the home was the chief consideration, but for the past five years we have served a long, hard apprenticeship. Now we are in the midst of the reconstruction period, when even greater demands are to be made upon us, and having served our apprenticeship, we are classed as craftsmen, and our work is ready waiting for us, more work than we feel we can very well tackle. However, the work is there, and we must do it, and keep before our minds our motto, "For Home and Country."

So much that we are hearing and that we must hear at the Institute Conventions will be in connection with work for the home, because that is the place where everything begins, where everything is cultivated and nourished, and the place where you can do such great work for the world.

The one thing we need more than anything else is co-operation between the people of the town and the people of the country, and I would offer this as a suggestion: that the Institute workers start out with the co-operative idea; forget that you are English or Scotch, and never mind about business for one or two meetings a year, but forgetting all class distinctions, let the people of the farm and city join together in a big rally. If we are going to make this a great country, it must be by working together.

Two places which left a strong impression upon me are the little country villages called Fort Stewart and Mount Julian, villages in the north of Hastings County. Fort Stewart is almost at the end of the old Ontario Central Railway, and then one goes by stage eighteen miles into the country; it is one of the most beautiful spots I ever visited, but the people are doing frontier work. They held a picnic on the 1st of July and they cleared $700. We should do our best to remember the work these women are doing in these outposts; if there is anything we can do to assist them, I know it will be most acceptable to them and helpful to ourselves.

At Mount Julian, there were four old ladies about eighty years of age at the meeting, and nearly everybody else was there, and everybody could get up and express herself well and fluently. They, too, are doing the outpost work, and these people want two things particularly: sympathetic interest and an intelligent understanding. I hope we are going to give it to them.

I have been more than delighted with the addresses I have been privileged to hear so far, because each one fills in and illustrates some of the points I would like to make, and what Mrs. Watt so admirably emphasized last night, our need for trained officers and workers, is one thing I wish to endorse. Our women are so willing and anxious to do their best, but in so many cases they hardly know how to approach the work or what to do.

There never was a time when women had so much resting on their shoulders; the future of our country is in their hands. Sometimes we wonder whether our women are measuring up. I do not say that disrespectfully; I do not say it with any idea of pessimism, but in going up and down the country we hear strange things. A week or so ago I was talking to a gentleman from Toronto, and he told me that he belonged to a club of some fifteen men; they are young men between the ages of twenty-eight and thirty-five; six of the men are married and their wives are likewise members of the club; the other nine have all been overseas, and this gentleman told me that these men are not likely to marry; they had passed the age when there is such a thing as first love, and they were not likely to marry now. I asked why, and he said, "Simply because the girls are not measuring up." It seems a dreadful thing to contemplate that our girls and women can fail, but he said, "Men are demanding more in women than they used to; careful training so that they would be fitted for any position in society is not the only requirement that a man demands in his wife; he wants something more than that. Our girls must be taught that they are not simply existing to amuse and to be amused." Men object to the way that women dress; they do not like it, and when we hear of women—though we do not have much of it in the country—smoking and drinking, it is so dreadful that we must do something to eradicate any such tendency among our young women, and we can easily do so if we will set about creating a good wholesome public opinion. That is one thing we can do and one thing we must try to do—cultivate a sound public opinion. You can soon tell a community where there is a good Institute doing good work.

Another thing I wish to speak of is on the matter of thrift. We have been so prone to consider we were doing the right thing only when we were being extravagant and making a show. We forget, even now, that our country is burdened with a tremendous debt; it will not be paid off in our day. Are the people who come after us to be mortgaged and handicapped on account of our extravagance? Are we, as Institute workers, setting the proper kind of example in the matter of thrift and economy? Do we talk about such things?

Are we making work a dignified thing, or are we paying all our respect to the idle people of leisure who have become only an encumbrance and a burden to us? What are we doing to keep down the high cost of living? Have we made any organized effort, or are we just grumbling and complaining? Are we insisting on extravagance being eliminated by becoming thrifty ourselves and seeing that other people are equally thrifty in so far as we can educate them along wholesome lines? Are we taking an interest in the housing problem, because that is of tremendous importance to us? Has it ever occurred to you that only one in six works? Is it any wonder there are labor problems and that workers are disgruntled? Then, are we taking an interest in matters pertaining to education, because we cannot neglect these?

Another thing I would like to refer to is.—Are we realizing what we mean to the world as Canadians? We know how large our boys have written the name of Canada on the map of the world. Are we standing for Canadian citizenship, and are we building up a great nation of Canadians, as we ought to do and as we would love to do? There are people who tell us, perhaps with reason, that the only Canadians are the French-Canadians, that they have characteristics of their own, that we in Canada take our mannerisms, our ideals, our opinions, our literature—everything—from the United States, and that the people of Ontario and the English speaking people of Canada, generally, are only second-class editions of Americans. Are we going to stand for anything of that kind, or are we going to be real Canadians? While we have great respect for our neighbors to the South, and while we hear people say the human family is all alike, we know that each member of a family has characteristics of his or her own. We are in a position geographically where we can develop one of the soundest nationalities the world has known, with our great open spaces and blue skies and the stock we come from. We are not a mixed race in the sense that many other nations are, and where there is a mixture it is the best that has entered into us. We are proud of being British; are we going to remain British in the development of one great branch of the British family?

In regard to our literature, I do not know how you feel about it, but it has grieved me to think most of the stories we read, even about the boys overseas, are American stories; so seldom do we get a story about our own boys, and we are so proud of them,—they are the ones who showed the Americans the way. And yet, we are content to read the stories as they are served up to us in American magazines. We buy American magazines and do not buy our own, forgetful that so long as the money goes out of the country, our publishers have no money with which to pay for the best in our country. I would like our Institutes to cultivate Canadian literature. If at our movies we are content to applaud everything that is American, all well and good, but do not neglect the things that are Canadian. These are ours, and we must do all we can to foster them and develop them and make them great.

I wonder if anything can be done to bind our people of the Provinces more closely together. We now have our Federated Women's Institutes. I was in Halifax two or three years ago, and I was struck with my own ignorance of the Maritime Provinces. Since then I have read something of these Provinces. We in Ontario seem to feel we are the centre of Canada, but we must remember the Maritime Provinces are older than we are, and they have had the brains of Canada. I say that with all due respect to the brains of other parts of the country, but one county in Nova Scotia has given six presidents to Canadian Universities. At the present time in the Dominion Parliament, the Prime Minister is from Nova Scotia; the leader of the opposition is a Nova Scotian, and the speaker is of Nova Scotia. Think what comes from Nova Scotia; coal, fisheries, and the coast lines they have. When the boys were going overseas, there was not a ship that came or went, nor a train, that the good people of Halifax did not meet and provide the boys with all manner of comforts, and we did not hear a word about it. I wish our Institutes could tell the people of Nova Scotia how they appreciated the work they did in the war. They did it like English people, without saying one word about it. Their problems are ours. It may be a shock to you to learn that the people of the Maritime Provinces did not want to come into Confederation, and until a short time ago, there were houses and houses in Nova Scotia that were idle as a protest against Confederation. Have we in Ontario been doing anything or are we going to do anything to make them feel they are part and parcel with us? When our people take trips, instead of going off to Florida or California or down to the Southern States, why could they not go to Quebec—we can do much to bring Quebec into the family of our country—or down through Nova Scotia? Why should not we as Institute workers get into touch with the people of the Maritime Provinces, and also with the West, because the problems the people have in any of those remote parts of the Dominion are ours?

What interest are you taking in immigration or all the great questions that confront us as a people and a nation—not simply as a Province, but as the whole Dominion of Canada?

Mrs. Watt: I was delighted with Miss Clayton's address. I think it is the best thing I have heard since I left England, except the report of the Janey Canuck Branch given at Ottawa. It is one of the most outspoken addresses I have ever heard. Perhaps it might interest you to know how Canada strikes some one who has been absent for six years. I would like to corroborate what Miss Clayton said about the Americanism of parts of Canada. I was very much disappointed to find Canada was much less Canadian that it had been when I left. It seemed to me that American magazines were everywhere, American slang was used everywhere, even the style of our clothes was American. We should encourage our own literature and develop a splendid national sentiment of our own. At bottom we are sound in matters of taste and feeling and nationhood, and why should we adopt the standards and ideas of any other country, no matter how good that country?

Then again in the matter of thrift, I brought some young people with me from England; they were Canadians returning to this country. They are scattered in different Provinces now, but they have all written and said to me how very wasteful everything is here. I thought when boys and girls notice that, it must be rather bad, because we expect the young people to enjoy pretty clothes and luxuries and the life about them, but they were all horrified with the waste of food and the extravagance that they found on every side. We never needed to be more economical than we do at this moment. The economy required during the war was trifling compared with the economy we should have now. Every country is mortgaged to the hilt. All humanitarian efforts, everything for the welfare of the race will suffer if our country cannot pay off the huge debt we owe. The whole progress of humanity is going back if we keep on spending as we are doing now. Remember France after the last Prussian war; remember the staggering debt that Germany threw upon her; we supposed for all time France would be under debt to Germany, but every single soul in that nation set at once to work to pay off that enormous debt, and they did so in five years. It was a most wonderful achievement, and one that we might well take to heart. We can, if we will, bring Canada back to the position she held before the war, but it can only be done by the united efforts of every man and woman and child in the country. We cannot economize on the health of the children nor the training of their minds. We must not economize on whatever raises the status of the people, physically, mentally or morally. It would be a crime to economize on these, but we can economize on all the things that do not matter.

GIRLS' WORK IN THE INSTITUTE.

Miss Chapman, Toronto.

There are two things we would like to leave with you. You are all familiar with the "girls in training" idea that has been put forth all over Canada now, and they are asking Sunday School teachers, School teachers and leaders of every kind to take up the four-fold development—physical, intellectual, social and spiritual. This work may be embodied in the Institutes with good effect, and many Institutes have already entered upon it. The girls call it the "Four H's"—the training of the Head, the Hand, the Heart and Health.

I attended the Convention at Ottawa last week and heard the report of the Janey Canuck Girls' Institute. The girls there are studying the laws of Ontario; one girl reads a chapter from their book on "Laws of Ontario" at each meeting and they discuss it. They meet with the boys once a month, and have all their meetings properly chaperoned, closing each one at 10.30. The report further stated: "We have no dancing nor card playing, not because we object to it but because we want the meeting to be open to everyone." The girls have decorated their town hall and have linked up with everything that is good in the community. She added: "We feel the training in leadership we are getting is a wonderful benefit to us." That is Head training.

With regard to Hand Training, you have heard a great deal from Miss Sutherland this morning when she spoke of the Demonstration Lecture Courses. Here is the machinery already to go to every girl in Ontario which will give her training in Domestic Science, Sewing and Home Nursing. When you get the girls doing things, and thinking they are doing them themselves, you have made a great step in advance. Another line of Hand training are the Canning Teams which have been trained by Miss McIntosh. We have with us this morning one of the teams from Peel County which won second prize in the Canning Competition. Miss McIntosh is working through the office of the Department of Agriculture, the same as the District Representatives, and this is one phase of her work. I do not see why any Institute District could not form Canning Teams among their girls, and have them compete in the County Fair.

Then in regard to the Health Training, there is an old story that I have told over and over again, but it is so very suitable that it will stand to be told once more. There was a girls' summer camp, and the girls were having a wonderful time down at the Lake Shore—some were swimming, some were building fires, others were having games, and they were all in the right kind of out-door clothes. Three outsiders came along: a doctor, an artist and a journalist. The artist looked at the girls and said, "What a picture they would make!" The journalist said, "What a story they would make!" Then the doctor looked and said quietly, "I am not thinking what a picture they would make, nor what a story they would make, but what mothers they would make!"

Many girls would be better for physical instruction and Health Training, and the machinery is all in the Department if you want it. Would not it be well worth while for the Women's Institutes to get the girls interested in more outdoor sports, tramps through the woods, races, and all such things?

It is often very difficult to organize a Girls' Institute, but you can have a Girls' Club in connection with the Women's Institute. Sometimes you organize a Girls' Institute and when you have it started, no one wants to take it up, because they have not leaders, and the reason they have not leaders is because the Women's Institutes have not trained the girls, and sometimes it is best for some of the women to help the girls along until they feel more capable of running the organization themselves.

Another idea that the Women's Institute might take home in regard to Girls' work, is to have some social life that would link up the girls and boys in your neighborhood. You might think that is none of your business, but I was interested the other day in reading a story of a community centre in Chicago, and one thing that startled me was that they were finding sweethearts for people who did not have them. You find a great many fine people in a community living single lives—a brother and sister living together on one farm, and three or four or five miles away another brother and sister living together, and perhaps five or six of such cases in one neighborhood. One always regrets that these people have not married, because they are such splendid people and would have built up such wonderful homes for our country. I believe that little neighborhood often lived too much to itself. These people, when young, went to school together and went to church, and they got to be one big family, and never thought of marrying each other. It would be a good idea for the Districts to build up a community life—have debates between the Institutes of the District, and basket-ball games and so on, where the boys and girls would get mixed up together—and then things would happen.

We ought also to get the boys and girls organized, so that everyone in the neighborhood, young and old, would have a better time. I believe one of the finest things the Institute could do would be to make people have a better time for the next few years. We have had a very busy time for the last four or five years, and many people are in need of more play. If we have the young people in with the older people in an organization, they will start up a vigorous social life which would be good for everyone.

There is a true story I want to tell you in this connection. Dr. Mary Harland was going through the West on a suffrage tour. She had a press correspondent with her, and she went to one prairie town where a woman, sitting in the front seat, seemed to drink in every word. She was a tired looking woman, and the press correspondent noticed her, and afterwards asked the woman to wait and speak to Dr. Harland. When the doctor came over she said, "I drove 60 miles across the prairie to come to this meeting. When I told Jim I was coming to this meeting, he pretty nearly dropped dead. 'Jim, I says, 'I have not been away from this house one day in twenty years, and if something does not happen, something is going to snap, and I guess it will be me.'" She went to work and drove across the prairies herself, and she told the doctor what her trouble was.

She said, "When I came out here to the prairies, it was fine. I did not notice any strain about it at all, but as year after year went by, with the babies coming and the work increasing, and not having any change, I began to get tired of the prairies. I would look at the sky and the clouds, and I got so that I would shake my fist at them and say, 'You are not going to get me.' I got sick of everything,—not of my children; I kept working along with them—then worst of all, I got tired of Jim. I did not like the way he got up nor the way he sat down, the way he drank nor the way he ate, nor the way he spoke. I did not like anything about him, and it was an awful feeling." The doctor knew what was ahead of the woman; she knew if she did not get some change something was going to snap, so she said, "Write home to your husband and tell him you are going with us for a tour for two weeks." The doctor saw that this woman was a real orator and what she would say would carry a good deal of weight for the side of suffrage. She went to the meetings and she would tell how many pails of water a prairie wife had to bring in every day, and all the other work she had to do, and she created a wonderful sensation; no one wanted to listen to the doctor, because she was the only person worth listening to. A wonderful change was coming over her, and she was making such a name for herself that she was giving the campaign quite an impetus. Then one night she did not eat any supper, and she came down with her suit case all packed up. They asked her what was the matter, and she said, "I am going home; there was a man in the front seat looked just like Jim." "But that does not matter; you will have to stay with us the rest of the time; everyone is expecting you." "Well," she said, "he looked just like Jim." The situation was saved.

Central Ontario Convention

The Eighteenth Annual Convention of the Central Ontario Women's Institutes was held in the New Central Technical School, Toronto, on November 12, 13 and 14, 1919. There were nearly 700 Institute members in attendance, about 500 being duly appointed delegates.

Miss E. D. Watson, Ayr, presided at the opening session on the afternoon of November 12th.

ADDRESS OF WELCOME.

Miss R. N. Church, Toronto.

We welcome you for three reasons: First, because all Canadian women worthy of the name have been brought together during the last five years in common cause. The terrific struggle through which we have passed has enabled us all, both in city and country, to exercise that divine gift of co-operation without which no victory could have been achieved. We welcome you, secondly, because the aims, objects and purposes of your organization are along similar lines to what all women throughout the country are endeavoring to do—home improvement, community betterment, work along educational, social and moral lines. All these things tend, as you know, to the development of sane citizenship in the national life of the country.

Your presence here in such goodly numbers to-day testifies to the increasing usefulness of your organization, and your inspiring motto "For Home and Country" has always appealed to me.

I should like to see that motto strengthened by the addition of two words: " For Empire "—" For Home, for Country and for Empire," and I will tell you why. His Royal Highness the Prince of Wales, in his memorable address to the Canadian and Empire Clubs at Massey Hall, gave this wonderful sentence: "The throne is the symbol, the heritage of our common ideals." To me it was a magnificent sentence; it embodies so much of the principles for which our men have fought and died, that I thought it well to make the suggestion I have, because at no time in the life of the Empire should that heritage be more strongly and thoroughly safeguarded than at present. Upon us devolves tremendous responsibility for the future, and we must look to it that all these ideals for which our men fought and died shall be cherished for time immemorial.

Canada is a land of opportunity.

On the home maker, the mother of the home, the teacher in the school, the professor in the university, the statesman—all patriots—devolves a tremendous opportunity. I think the teacher of to-day has the greatest opportunity in Canada's history in trying to develop in the young people of our country, sound minds, trained intellects, and above all, a reverent spirit. We need to develop a spirit of reverence at this time more than at any other time in our history.

I hope as we shall face the future with the courage and optimism that characterizes all Canadians, we may be able to look back as the years go by and say with pride: "We have fought the good fight; we have won the race, we have finished the course," and we have kept the faith with those who have died that we might live. I greet you, I am sure, very heartily and warmly welcome you to our city to-day.

REPLY TO ADDRESS OF WELCOME.

MRS. WILLIAM TODD, ORILLIA.

When nine months ago you elected me as your President, I had a feeling of intense pleasure at the honor conferred upon me, but I have had, almost immediately upon that and ever since, a growing sense of the very grave responsibility that you placed upon me in that election, and to-day I think I feel that responsibility more perhaps than ever before. In replying to the courteous welcome accorded us by Miss Church, I find myself wondering just how I can represent the mind of 30,000 women. It is difficult to gauge the mind of any one other woman; sometimes it is difficult to read your own; you have to sit down occasionally, face your trouble and study yourself. To represent 30,000 different minds is quite a task.

We will just take for granted that every Women's Institute is a hive of industry, that every member has something through her activity by which she is expressing herself. I simply wish to-day to speak of the spirit back of all our work, the spirit animating our Women's Institutes.

You know a particular piece of work is not of very much value unless the right spirit is animating the worker, and in the spirit of the Women's Institutes we are particularly fortunate in having that glorious motto; and we appreciate Miss Church's suggestion that we should add "For Empire" to it.

We are fortunate, at this particular convention, in having with us one who has done so much as a Women's Institute organizer, to bind all parts of the Empire together, to bring the rural sections of the Old Land close to ourselves, in the person of Mrs. Watt. We have indeed great reason to be proud of the work that has been carried on " For Home and Country " overseas, and we feel that it is to-day a link with that Empire.

The spirit of the Institute is the spirit of neighborhood. I heard Mrs. McClung say, not so many months ago, that what we needed to-day was not more legislation, but more neighboring to make us Canadians, and we are facing that great problem with that neighboring spirit abroad in our Women's Institutes. We had a little example of what the war had done for us when the " flu " devastated so many sections of our country a year ago. As the women went in and out through the towns and villages of our land, women with some knowledge of First Aid or Home nursing, and did what they could as neighbors, we thought of the words of the poet when he said:

> There is naught that is better to hear,
> Than the foot of a friend at the door;
> There is naught that is better to feel
> Than the clasp of a sister's hand,
> That says, "What are words between us—
> I know and may understand."

I think that just gave us a little aftermath of the war, what it had done in bringing us together, and gave us to feel that we are all neighbors, and with this neighboring spirit we go forth to our biggest work.

We do not wish to dwell upon numbers or upon the amount of work. You know the old writer says:

> It is not growing like a tree in bulk
> Doth make man better be,
> Nor standing like an oak three hundred year
> To fall a log at last,
> Dry, foul and sere.

But we in the Institute do believe, and we are going forward in the belief, that small occasions bring an opportunity for growth, and that in the small measures life may perfect be.

Mrs. Watt told us that Queen Mary said she liked the spirit of our Institute work. After all, the spirit that animates us is the big thing; that means growth and development.

We are always glad to come to this great city. It means to many of you women much sacrifice to come; probably you were up very early this morning in order to attend this session; it has meant planning, preparing ahead so that those at home would not suffer, and all that adds value to your coming. It is always a pleasure and delight to come to this city; they are opening more and more a door of understanding to us, and I am very glad indeed that they will probably see more of us in the future than they have in the past. Then, we are very glad to come for the sake of the city folk. You know we have too long thought that they were the ones who received the best in life's journey, but we are getting away from that idea. We are glad to come from the wide spaces of our country, with the open sky above, trees all about and the birds singing. In this city, they have great factories employing thousands and thousands of hands, but we of the farm and of the smaller sections of the Province feel that we have the best, after all, for we have to deal with living things. We do not think of those about us as "hands" in the sense of being merely a machine, but we deal with living creatures, not only man but all God's creatures, and we have to do with the building up of a better agricultural industry. One of our objects as Women's Institutes is to make better conditions under which the basic industry of this country is carried on. We are glad to come for the sake of the city people, because it is well to bring them the breath of real life. The poor people in the city—just watch the street cars going by, people hanging on to the steps and straps; you cannot imagine what to liken it to—they are to be pitied, and I think it is a fine thing, as women from the country sections, to come with a breath of real life into the city, and mix with the city dwellers who have chiefly chimney tops about them instead of the heavens of God.

We are glad of the spirit of true democracy that rings in our Women's Institutes. There are all sorts of democracies. We have not a perfect impression of that word, but in our Institutes we are trying to learn its true meaning, and we have the very finest democracy. We have all kinds of women; there is no dividing line; they come there that they may grow as citizens into a finer womanhood. We have this spirit of working together and expressing ourselves by our work. That, after all, has the greatest value of the many things you do. In the reports we have listened to, it shows the effort of interest put into the work, and of course there should be effort, because we want every woman to somehow, through her Institute, express herself, and that means 30,000 expressions of self. What a wonderful contribution it would be if we could get a perfect expression of every woman's own individuality through her Institute work! We have often read the story of the Talents. To my mind, looking out over our women in Canada, and being one of the kind that sat back content within my own four walls, with very little thought beyond them until war called us out, to my mind, the tragedy of the one talent folded away is the greatest tragedy that this life can know, and it is to women of one talent, to women who have not had the opportunities for development on many sides that we come as Women's Institutes in this wonderful spirit of neighboring, and plead and desire most earnestly that every woman should have that power of expression that gives value to the nation. It is as individuals that we live; it is as individuals we come into our Institute work, and it is as individuals that we will make the greatest strength for this great movement throughout our country sections.

We are very grateful for the suggestion which has come from Miss Church, and whether we add anything to our splendid motto or not, I would like, when we speak of "country," that we think of all that has gone to make that country what it is—the spirit of the organization. You have my very best wishes and will have my very best service in making the Institutes what they might be.

GREETINGS FROM BRITISH COLUMBIA.

Mrs. Blackwood-Wileman.

I come from the other side of a big continent with a message of sympathy and love from the Institutes of British Columbia, and in addition to a message from the Institutes, I bring you a message from the Superintendent of our Institutes, Dr. Wilmot, and from our Minister of Agriculture, Mr. Barrie; they send you their hearty greetings and every wish that this great Federation which we have all entered into, may bring great good and be of great service to the whole of Canada. It is indeed a great and wonderful organization, and to-day the appeal comes to our womanhood that it may be a federation of true unity, of soul and heart and spirit, that in every way we should co-operate one with the other. If we can succeed in that, and if we can just put aside the little smallnesses which I am afraid we women sometimes have, but which I am sure we are all trying to do without, we shall be a very great force not only for Canada, but for the other countries, which I am sure will soon join in with us.

We are not quite the smallest child of the Federation. We have sixty-seven Institutes and nearly 3,000 big hearted and loyal women members, and they are doing their best. We have a splendid health campaign and we have a splendid child welfare centre, and with that we hope to get a maternity centre so that the mothers will be well cared for. In addition to that, we are trying to improve everything in the shape of education, and our women have been working very hard in many parts of our Province for consolidation—and they have succeeded. Then we are working for District Nurses.

The speaker expressed the hope that the Federation would be one of active personal co-operation and result in interprovincial assistance, and continued: It was a great disappointment to me that Mrs. Ralph Smith, the woman we are so proud of, our first woman member of the Legislature, has not been able to come. She has helped to get us the minimum wage, and also equal guardianship of children, and there are many other things she is working for. She said at one of our conferences the other day: "Now, you know, dear women, you want to get things, and you must not forget that you can get what you want if you stick with it, and if you do not get it, go on with it and go on with it until you do get it. You are bound to get it, and what is more I will help you."

She is now convener of the Legislative Committee of the Federation, and with her at our back, I think we may hope for a great deal. I extend greetings from your sisters in British Columbia.

GREETINGS FROM GREAT BRITAIN.

Mrs. Alfred Watt, M.A., M.B.E., England.

I am charged with messages from Great Britain to the Women's Institutes of Canada. In the first place, I delivered my message last night and the good wishes of Her Majesty Queen Mary. Her Majesty attended our first big Exhibition in London, as an earnest of her good will towards our work. She examined the specimens of the work sent from the Institutes and purchased a number of them, afterwards distributing them in a number of places so as to make known the work of the Women's Institutes. She then invited me to speak before the people on her estate in Sandringham and tell them of the work. She came herself to the meeting, although it was within a week of the burial of her little son, because she was unwilling to disappoint a Canadian who was to speak. She announced on that occasion she had read with interest everything she could find pertaining to the Institutes, and she felt it was a movement deserving of the support of the high and low throughout the Empire, and that she herself could do nothing better than have a Women's Institute, if it were their desire, on her own estate at Sandringham. I explained to Her Majesty that a Women's Institute could only be formed by the consent and good will of those who were to be the members of the Institute; that it would not be possible for her or anyone else to form a Women's Institute except with the expressed wishes of those who were to be the members. I also explained that the members of the committee were elected by the people who composed the Institute, and that the President of the Institute would be chosen from the members of the committee and elected. Her Majesty, with the true spirit of democracy which animates the occupants of the British Throne at the moment, was perfectly willing to accept the presidency of the Institute on these terms, and she was duly elected by the members. I think that is something we all ought to be very proud of. I do not think a reigning sovereign was ever placed in such a position before, and the pleasant way in which she accepted it was one of the charming memories we have of her.

The next message I was charged with was, that of authority to unite or affiliate the Women's Institutes of Great Britain with the Institutes of Canada, and this we were able to effect at the Federation of Women's Institutes. Then again I have authority to link together the Individual Institutes of England with the Individual Institutes of Canada, and those Institutes which wish to exchange programmes and correspondence and possibly articles which they make, with any Institute in England may be able to do so. I think I am safe in saying this could be done through your own Department of Agriculture, and I have made arrangements with persons in England to effect that affiliation of Institute to Institute wherever it is desirable. One suggestion was that Institutes of similar names should unite; another suggestion made was that Institutes engaged in similar activities might unite.

Another message I am charged with is that a great many Individual Institutes, when I was leaving England, sent me specimens of their work, in the hope that the specimens might make them better known to the Institutes of Canada. Many of the Institutes sent me personal letters with messages to Institutes of Canada.

I have also charged myself personally with something more. I do feel that, at this stage in our Empire's history, any of us who know both the Old Land and the New Land, should give ourselves the task, if opportunity offers, of doing everything possible to bring together the women of England and the women of Canada. We can do that through the Women's Institutes, because we are one in aim and one in spirit, and I hope we will be one in material things also. I was not one of those who said at the beginning of the war, "After all, some good will come out of it because we, who meet together from all parts of the Empire, will know one another better, and hence will love one another more." I did not think it, because I have not found it true that when members of the same family live together they love one another more. It was always my terror that we would love one another less. But we are an Empire bound together for well or ill, and we must make the best of one another and not the worst. We must rise above many individual characteristics. Because some individual English woman or man has characteristics we do not care about, or some Scotchman or Welshman, that does not affect at all the great mass of English or Scotch or Welsh. The British Empire stands for liberty, for democracy, for equal opportunities for all, and we ought to be big enough to work entirely for that, and not to be rubbed up the wrong way by personal characteristics that we all have. I have set myself the task that, so long as we are one in a great big aim and unselfish democratic spirit that animates us, I must try to do my individual best to see that we understand each other's point of view, not perhaps that we know each other better, but that we get to understand each other's point of view, and hence make allowance for what may possibly militate against that feeling of unity and harmony which we must have if the British Empire is going to be what it should.

GREETINGS FROM MANITOBA.

Mrs. D. Watt.

After a brief reference to the inspiration which Ontario has been to other Provinces in Women's Institute work, the speaker complimented the Institutes of Ontario on the efficiency of the superintendent, and the splendid type and capability of the president of the Ontario Federation, and said: In our Province, the work is in its infancy when compared with the work of this Province, but we are very proud of the work we have accomplished, and I think you would agree with me, if you could see what we have done. I would like to outline a little of the work we are carrying on in our Province, to say nothing of relieving the loneliness of the rural woman in giving her a brighter and broader outlook on life. If we had accomplished nothing more than this, it was well worth while, but we have done a lot more than that. We did that in the first place. We aroused our women and made them see that they had duties outside of their own homes. They owed a duty to the community in which they lived, and the country to which they belonged, and I think that is one thing that our Institute is doing all over the Dominion. I think that every small town in the West has a society; they have instituted rest rooms within the communities. We have very severe weather, and you can realize what it means for these women, after driving for long distances, to have a room that is always warm, where they may get a light lunch and a cup of tea, and where they may meet with the women of the town on Saturday in a social gathering.

In regard to libraries, the Extension Service will give to any society a sum of money, up to $100, if they raise a like sum, to be expended in books of their own choosing. At the end of the year, these books are returned to the Extension

Service and another collection of books sent out. These books are largely fiction. The books that we study from are in packed libraries, which are sent around from time to time whenever we want them; these are for libraries in the small towns. A great many societies have availed themselves of this, and it means a great deal to that community.

Much praise was given to the work of the Boys' and Girls' Clubs of Manitoba, and District Conventions were approved.

I believe, for our size, we have more demonstrators than most of the Provinces. The courses in dressmaking are very much appreciated. The instructors are the very highest type of dressmakers that can be had in the Province, and they give that course twice a year, every spring and fall, and if they so wish they may have them during the summer months for the school girls.

We have some two-weeks' courses, in which you may learn almost everything—raising chickens, making cheese and butter, learning to run an automobile or a gas engine or tractor. These are the advantages that come to our Institutes through the Extension Service.

About two years ago the Health Department of our Province approached us and asked us if we would co-operate with them in giving courses throughout the Province, so that during this year, and it will be continued during the winter, there will be a two-weeks' course in nursing put on in every small town and hamlet throughout our Province. In fully half of the districts in our Province there are already District Nurses, and they have been put there through the influence of the Women's Institutes of Manitoba.

Last spring, the Educational Department asked us if we would co-operate with them in helping the teachers. There are no missionaries that go out to a foreign field that do more trying work than these young teachers are doing in the West, living lonely lives in the foreign districts. Some of these teachers are practically giving their lives for the foreigners. The idea of the Educational Department was for us to co-operate with these teachers. The Department was doing what it could, but it needed the woman's touch. One of the first things we are asked to do is to give a phonograph of some kind to the schools, because music has more influence over the foreigners than anything else. This is the last branch of work we have taken up, and we are meeting with very great success, because in the West we have that question of the foreigner to deal with—the New Canadians as we call them—and it is a case of unless we assimilate them, they will assimilate us. Therefore, we in the Institute realize that it is one of the most serious problems we have yet faced, and something that will require our whole energy if we are to Canadianize these people.

The last question we are discussing and entering upon is one that you are all interested in, and that is the community kitchen. I believe the community kitchen is bound to come, as it is the only solution for the "help" problem, especially in our Province, and it is a subject that we are discussing very earnestly at the present time, and we are hoping that we may have the privilege of starting the first community kitchen in our Province.

GREETINGS FROM NOVA SCOTIA.

Miss H. MacDougall.

The Institutes in Nova Scotia are in their infancy, and yet the work they are accomplishing there is really remarkable when you consider the stress of war under which we have been working during the last five years, and the difficulties which we have had to overcome. Our first Institutes were organized by Mrs. Laura Rose Stephen in the summer of 1913.

Of course, during the war, we were very much interested in Red Cross work, and one small Institute raised $1,200, apart entirely from the work they contributed in various ways. One way we had of raising funds was by selling Victory Bonds and giving the commission to the Institute. Community Halls are being established in Nova Scotia, and are filling a real need in our lives. Memorials, of course, are under consideration.

The Women's Institutes are taking a very live interest in the education of our children, because they realize it is of prime importance for the good of our land.

Then, a great many of the Institutes have groups which meet and sew for each other. If there is a family with a large number of little children, and the mother is kept busy with the housework, they will form a group and do the sewing and darning for her. A great deal of interest is taken in the Infants' Home, where we find the little babies who have no homes, and we have instances of children being adopted, and there are many districts taking up that work.

During the Halifax disaster, the Institutes organized themselves and inside of an hour they stood ready to send food and clothing to the needy. The whole country was most sympathetic, and we in Nova Scotia were particularly touched with the help that was given to us from all parts of Canada and all parts of the world. The Institutes are also taking an interest in the Old Ladies' Home. I cannot get away from the human interest; in these days of materialism and commercialism, it seems to me the human interest is of great value to the Institutes. Neighborliness is of incalculable value in the habits of our land. Just before our Convention I received a letter from one little village far away from our headquarters, and they said, "We have not heard anything for so long, and we feel we are so out of it, that I do not think we can send a delegate. We find it hard to get a meeting, and we cannot send anyone; the interest is not very great"—a little wail of disappointment to feel they had been forgotten. I at once wrote them and told them the reason for that was that they had been without a Superintendent for nearly two years, and in reply I got a letter saying, "We have banded together and we will do all we can to help the work of the Institute." The human interest is invaluable.

We are starting now to have nursing and St. John's Ambulance courses. We also have the Package Libraries, and are working for the Victorian Order of Nurses.

GREETINGS FROM QUEBEC.

Miss S. J. Armstrong.

It affords me great pleasure indeed to have the privilege of coming before the Women's Institutes of Ontario. You cannot realize, sisters, how much we owe to you, in the Province of Quebec, for this great movement that has become so general among the women of our Dominion. It is to Ontario that we owe the beginning of our work in the Province of Quebec. For a number of years we had been endeavoring to get something of this kind started. I believe in communion of thought; when one group of women are thinking about something, it seems to stir us all, so we had been thinking along similar lines to what you are doing in Ontario, but we had no way of expressing the thought. We appealed to our Government, but you know they are very conservative and very slow, especially along the lines of women's work, so that they did not take up the work as quickly as they have in some other Provinces. We had no hand books to carry on the work. We appealed to your Superintendent, Mr. Putnam, and he came to our relief very generously indeed, and the Province of Ontario helped the Province of Quebec to start their first work in Women's Institutes.

Mrs. Muldrew started the first Women's Institute in our Province, and it has grown until now we have between fifty and sixty among the English-speaking people. We are doing similar work to what you have been doing. We have now a Superintendent, assisted by some demonstrators. These are not paid by our Government as yet; our Government has not assisted us so far. There is a similar work among the French people, as you know, and that has received assistance from our Government, and we hope to come in too. The trouble has been we have not made ourselves understood by our Government, as we should. Our people are not without initiative, as far as the men's work is concerned, and our Government supports the men's work most liberally. I do not think there is a Province in the whole Dominion that does so much for agriculture as the Province of Quebec per voter, but so far they have not done very much for the women. They are doing wonderful things in the French part of our Province, and we are hoping for better things. Just now, we are planning for Courses in Home Nursing among our Institutes.

Then, again, we are starting along Social Service lines.

I would like to plead with you that you have toward us, and toward our sisters of another language, a feeling of neighborliness that has been so much spoken of. If we knew each other better, we would love each other more.

GREETINGS FROM SASKATCHEWAN.

MRS. W. F. CAMERON.

My duties have been so heavy as Secretary that I have been devoting all my energy to taking notes. We look to the East, entirely, for our instruction and information. We look to ourselves for the energy to carry out these instructions. We look to you with curiosity to see what you are going to do next, but we think it is so much easier for us to go ahead than for you, because ours is a new country, and we have no traditions to go back upon like you have. Our Home Makers' Clubs are new, our Province is new, and it is not difficult for us to progress in our Province because we have nothing to undo, so there is really nothing to hinder us starting in always with the best. Take, for instance, our rest rooms. In Ontario, I can conceive of you getting an old house to turn into a rest room; in the West there are no old houses available to turn into anything, so our rest room is in the Town Hall, which is a brick building, and our method of maintaining it is the best also. We get a large room in the Town Hall, and we have electric light from the Town Council. The municipality on one side of us gives us $25 a year, and the municipality on the other side gives us $25 a year, and this we spend in keeping the room clean. The other expenses are paid for by ourselves. We did not in these Clubs set out to make money, but to work for the good of the country woman, to make living pleasanter for her, to bring her in touch with the town woman, to give her something to go out to, to have meetings where she could bring her baby to. Our meetings are open for any woman to bring her baby with her; she can go there and not feel she is imposing upon anyone. These, I think, are the services which the Women's Institutes must render to the country woman all over.

Then, of course, we have a tremendous army of people who do not speak our language; the children will not take long to learn any language. We have a most benevolent Government and a University that looks after our people. We have nurses and lecturers at our beck and call. Our municipalities are building hospitals, so that very soon, in our Province, a woman can easily get to a hospital, but we want our women to take a more intelligent interest in what is going on in the world; we want them to become citizens in the true sense of the word; we want them to use their vote intelligently, and although we are non-partizan and non-sectarian, I think it is the duty of every Women's Institute to let the women know what their power is and what they are voting for.

COMPLIMENTARY BANQUET.

Following the Wednesday afternoon session, a banquet was tendered by the city of Toronto to the Ontario Women's Institutes and the delegates from the various Provinces, at the King Edward Hotel, at 6.30 p.m. Mayor Church, as toastmaster and host, welcomed the guests to the city. He thanked the Institutes for what they had done for the Empire during the Great War, and said he hoped there would be many more gatherings of this kind in the city of Toronto.

Controllers Robbins and Cameron also officially welcomed the Women's Institutes very cordially to the city, and expressed appreciation for the opportunity it had afforded the city to tender the banquet to them.

Judge Emily F. Murphy and Miss E. D. Watson replied on behalf of the Institutes. Judge Murphy said: " We are very much indebted to the city for having us as their guests to-night. We were talking about this luncheon to-day, and the Western women said, " Do you notice in Toronto they always give us something to eat, whereas when they come out West we show them the sights. We concluded your sights were always on tap—every block you went you saw the sights.

" We have all been extremely interested in what Toronto is doing for the Victory Loan, and I can see where the Government of Canada must look to old Ontario for its financial support for many years to come rather than to the Western Provinces. I heard a man say the other day that in thirty-five years from now the great wealth of Canada would be on the Pacific Coast, but, in the meantime, Toronto was the financial centre of Canada.

" Nearly all the good things we get come from Ontario—our people, our papers, and our politicians. Before I came East I found that all the members of the Government of Alberta with the exception of two—one from Quebec and one from Nova Scotia—were from Ontario. The Prime Minister, the Cabinet Ministers, the

Deputy Minister and all the assistants were Ontario men—and most of them came from Bruce. That is why we say that Ontario is in Bruce."

Miss Watson expressed appreciation on behalf of the Women's Institutes of Ontario for the entertainment provided and the opportunity afforded for city and country to meet together in social intercourse.

EVENING SESSION, NOVEMBER 12th, 1919.

MRS. WILLIAM TODD, ORILLIA, in the Chair.

NEW BRUNSWICK INSTITUTE WORK.

MISS H. McCAIN, NEW BRUNSWICK.

It was only in 1911 that our organization was started in New Brunswick, and our thanks are due to Ontario for helping us with information and organizers. The work grew very slowly but surely, and to-day we have 133 branches with an enrolment of over 5,000 women. Our work during the last five years has been war work, and the women responded nobly to the different appeals. Since then, our attention has been turned to our own homes and has been developing along community lines. Our work during the winter consists of Short Courses in Household Science, Classes in Cooking, Sewing, Millinery and Nursing. These courses were put on last winter in eight English speaking centres. Almost one-quarter of our Branch Institutes are in French districts and we have put these courses on in four French districts. The attendance was perfectly splendid, and we had 135 at some classes. During the summer, the work is continued chiefly along demonstration lines; this year they were principally on the value of milk. We demonstrated the value of food dishes made from milk. We issue Milk Bulletins, and Food Bulletins. It was the Women's Institutes which started medical inspection of schools in New Brunswick. They have taken a great interest in school work.

The federation which was brought about last year, not only widened our scope of work, but it will be instrumental in binding together the women all over Canada, and they will, everywhere, stand for the same principles and the same ideals, and when the day comes for an actual alliance outside of Canada it will further broaden that scope and further tighten the bonds so that the women not only of the Women's Institutes, and the men, who everywhere must stand together, will make themselves worthy of the blood-stained fields of France and Flanders, and make this old world a better world because we have lived.

WOMEN'S INSTITUTES OF SCOTLAND.

MISS EMILY F. GUEST, ORGANIZER OF WOMEN'S INSTITUTES IN SCOTLAND.

I am delighted to be home again, and you may imagine my pleasure when I just got off the ship in time to get to this convention. Some of you know what the Motherland is feeling about you, you know this Empire of ours is a wonderful thing. Germany thought that if she could destroy our navy she could destroy our Empire. She never made a bigger mistake. This is a family of nations, the Mother Country and her daughters, and if every ship of the British Navy had been sent to the bottom, the British Empire would have remained. We are bound together by a family feeling, and I want you to try and realize how tender and deep is the feeling in the Motherland towards Canada. I think we won her heart with a million bags of flour at the beginning. You know the way to a man's heart, and England feels that we have never failed her all the way through. That shipment of flour was only the beginning. While on the ship to come home, I got a letter for the National Federation of Women that was held yesterday. It read as follows: "I am directed to ask you to convey to the Ontario Women's Institutes a message of kindly feeling, and greeting from their sister organization in the Mother Country. The Women's Institutes in England and Wales will never forget that they forged the first link in the chain that will bind, not only the rural women of the Empire, but the women of the world.

"The Executive wish me to thank you for the good work you have done, and to wish you a pleasant voyage home."

I want you women of Ontario to take that message to yourselves. I want you to remember that I was only your delegate over there, and that the highest standard that I could reach, was to interpret over there the spirit which had moved the women of Ontario in these Women's Institutes. We had very hard work because we were fighting a life and death struggle; and you don't know what it is to have to look around and wonder where your next week's food was coming from. That would be something new to a Canadian; you might as well ask "Where is our sunshine coming from?" I sometimes ask myself "Am I really giving to this country the spirit of Ontario?" I told them about that first Women's Institute that was formed at Stoney Creek twenty-three years ago. I told them the story of the prairie woman who said: "When our pigs got sick the Government sent instructors around to tell us how to treat them, and they even sent a pig doctor; but when the baby got sick we did not receive any instruction or any doctor, because we couldn't sell the baby as we could the pig." I told them of some of the things you are doing in Ontario, and it went to their hearts. I wonder if you would like to know some of the things I told them about what you were doing here? First of all, I told them that you are home-makers brought together co-operatively, girls and women. Secondly, that it was a man's and a woman's job; that is the reason the Institutes have this co-operative spirit; men and women together. That impressed, particularly the people in Scotland. It takes a man and a woman to run a perfect home. If one fails in the home, then the home is not perfect. They felt that that was sound, and it is on that basis that our Empire is built. Then the next thing, was the co-operation of all homemakers—those who were homemakers, or those who ever might be homemakers. If you could only see these Scotch women and what they can do. They like a balanced programme; we run too much to one side. One of our workers in England admirably described a programme: Something to hear, something to see, something to do, on every programme. Go home and think about it and see if your programme stands the test. Again, the co-operation of the Institutes with each other in the county, but perhaps most of all the co-operation of the homemakers with the Government, the idea of making homemaking a department of the State. It never occurred to them over there. They said: "That is the thing, homemaking and the navy are two great essentials of this island, and we are going to make the Department of Homemaking just as great as the navy." These are some of the things I told them you were doing: Better homes, better people, better communities, a better and purer social life, and a better and more prosperous agriculture.

They have a very comfortable country over there because they have lots of women, but they never take the trouble to save steps, and they were very interested in our work and our methods. One night I was talking at a banquet where there were men and women, and the men were very embarrassing because they were so enthusiastic. We had to have twenty-five women before we could organize, and if there were not twenty-five women the men would promptly say, yes, they would join, or their wife or their mother or their mother-in-law. They would not take the trouble to go home and ask them, they would join them on the spot.

You are making a big impression in Scotland by using your franchise. One woman at a meeting got up and said, "I have been to Ontario and there is a town there called Galt, and there were four thousand Scotchmen in that town, and they have got prohibition." Nobody believed her at that meeting, but she said, "You can go there and see it." I realized when I was over there that while you were working to make your own home better and your own community better, you had done something to help save the Empire in its hour of need. Not only have you done that but you have given inspiration to the world. Nobody knows what the future of the Empire is going to be. The Women's Institutes over there are taking a greater part in this reconstruction period than they did in the war. They have been saying many kind things about us in Ontario, and they are very glad that we started this work. Somebody said to one busy Institute worker, "You are such a busy woman and you have so much to do at home." She replied, "I know that I am busy and I just feel sometimes that Institute work is more than I can do, but there is this about it, I get up three meals and wash dishes for 365 days in the year, and I go to the Institute once a month and I get things there that I haven't got at home. We have a library and reading room, and other things and they all give me inspiration to go on with my work at home and help to build up this great Empire." I think of another gray-haired mother who said, "We are in a very curious position here, because all over the world they are going to look to us as the first place where Women's Institutes were started. We are going to be looked at now, people are going to examine us, people are going to come from a country like Russia." The Institutes will be a wonderful thing to carry a message back to that country, and to bind together that bruised and broken country, and we must be in a position to be able to do it.

ADDRESS.

Judge Emily F. Murphy, President of the Women's Institutes of Canada, Edmonton, Alta.

As I was listening to the singing to-night, I wondered how much the words meant to you who live in Ontario. You have to go away and be exiled for fifteen or twenty years to realize the meaning of the "Church in the Wild Wood." I sat here with a choke in my throat trying to keep the tears back because I know of a grave on the hillside in a little village in Simcoe County that these words fit so well: "There lies close by the Church in the Valley one I love so well; She sleeps, sweetly sleeps, neath the willows; There close by the side of that loved one neath the trees where the wild flowers bloom when the farewell hymn shall be chanted, I shall rest by her side in the tomb." Yes, I have a mother in a little hillside graveyard in Ontario. When my little girls died in different parts of the world I brought them across the continent to Ontario that they might rest in the soil that nurtured their mother, and when I die I am coming back to Ontario.

I would like to speak of one change I have noticed down here and that is that the Church and the State are coming closer together. We used to think that the lesson leaf was all that was necessary for the child in a religious way, and those who did not attend Sunday School did not even know about the lesson leaf. Now we are beginning to realize that we are responsible for the whole life of the child, not only Sunday School children but all children. I think perhaps the first great cleric to recognize this was your late Minister of Education, Dr. Cody. He said, "All children are in my parish," and as one who has been following his work in the West I want to pay him that tribute. This spirit recently broke into flame in the City of Winnipeg in the great Educational Conference that met there last month. They came to the conclusion that citizenship must be taught to the children in some way. There are children and young women who come into my Court who do not know who God is. I asked a girl of eighteen the other day when she was handed the Bible to take an oath, "Do you know the nature of an oath," and she said "No." I asked her if she had ever been in church, and she said "No." "Have you ever said a prayer?" and she said "No." She had been living twelve miles from a school and a church all her life, and she had never been taught anything. It is not a rare case, and I presume you have some in Ontario. We have a good school system in Alberta, and we are waking up to the fact that the children must be taught these things somewhere and somehow. How can we ask them to swear in our courts to tell the truth, the whole truth, and nothing but the truth, on the Bible, if they do not know what the Bible is or who God is? We are waking up, and we have got medical inspection in schools. A little while ago, all this work was done by the church, I remember when they used to take up a collection in the church for the poor of the parish. I don't think they do that now.

The State is now interested in the physical health of the children, in their morals, their plays and all that. We do not care whether they are Jews or Gentiles, or what their religion is, they are all the same. In our Province we have a system of free hospitals, and you cannot pay if you want to. Everybody gets the same treatment, and every municipality has to have one, and the people are going to be taxed on their farms for it. You may yet get them in Ontario. We are keeping the children from sin by teaching them some other way. We are not beating them any more, or anything of that kind. My point is, that philanthropy has no place in a healthy community; all these things should be done by the State, there should be no philanthropy. These things are largely due to the teaching of Christ as demonstrated by his Church. Surely this is a splendid union of Church and State.

Before leaving this matter of the State I wish to congratulate the women of this Province on having achieved their franchise. In the old days, we were taught that men must work and women must weep. Now that you have got the ballot, use it. It may be difficult to get out when the morning is cold, and the election comes on a nasty time of the year, and you are tired, but you should get out and vote; only don't go in somebody else's motor; somebody else has to pay for the motor, that is just graft. Use your franchise to save yourselves from spiritual deterioration that comes to the souls who sleep; sleep and death are very closely allied, indeed, we speak of the sleep of death. Don't let the tremendous activities of life pass you by. The great body of the people only respond when their personal interest is touched. I always keep a list of the candidates for those who do not know, and I can always put my candidate in. Use your franchise because the solution of the problems that confront our age can only be solved by both sexes bringing to themselves their particular viewpoint. An exclusively male State is ill balanced. I hate to say that before so many men for I love the men. Germany was a male State and you know how it plunged the world into war. Now, use your vote. Not only have the women the right to vote, but they have the right to be voted for. In our Province, every position is open to a woman from Premier to poundkeeper. One great trouble is that women are so jealous of each other. Emily Pankhurst gave the franchise to the women in Great Britain, and when they went to vote the women plumped against her, and she was not elected; that gave me quite a chill.

Now, I want to speak about other things. One lady said to another in Winnipeg, "Why, Mrs. Murphy is not a rural woman, she is a sort of highbrow." Nellie McClung and I are very good friends and we talk over a lot of things. I said to her, "Why, I was born on a farm and the first sound I heard was a little pig squealing under a gate." She said, "You need not flatter yourself about that, I was born on a farm and I heard that pig, and I went out and pulled it from under the gate." We have both been at it ever since, she on the hustings and I on the bench, and we have pulled a great many blind pigs from under the gate. We are doing it every day, and you could not believe how these pigs squeal. When I went out West first, my husband was not very well and I wrote for the Winnipeg *Telegram.* I lived out on a farm and my husband had a timber limit, and when his horses came in from the timber limit I took them on my farm; I had 320 acres, and I engaged the men and I plowed that land, and I bought the seed and put it in. I know all about seed. I kept farm books and I kept them right and I always knew how much money I was making. I marketed my grain and engaged my own cars and sent the grain to the elevator, and don't any of you come calling me a "highbrow." My father-in-law lived for 90 years on the same farm. I was prouder of my wheat fields than anything I had ever done. Why not? When Rome had the mastership in wheat she had the mastership of the world. Wheat is coin, and coin is wheat; they are all the same thing. In our Province, we have a man who the year before last banked a quarter of a million dollars from his crop of the season; that was for his one year's crop; he had 44 bushels of wheat to the acre. That brings us face to face with the fact that the man who tills the soil is no longer the drudge; those days have gone by. The man or woman who has taken a scientific course in agriculture is an educated man or woman. The war has taught us that the real wealth of Canada lies in the land, that the only real estate is real estate. It was said one hundred years ago that the wealth of France was in the plow and the cow. Heretofore, in Canada we have been getting butter and eggs from Australia and fruit from the United States, and all we have been raising on the land was the price. But our land is now going to bud and blossom as the rose.

We should teach our children in the schools that self preservation is the first law of nature. C. W. Peterson wrote a book called "Wake up Canada," and he said, "We must all get down to bedrock facts and think in terms of agriculture," and we should say "That is like bringing wheat to Winnipeg" instead of "That is like bringing coal to Newcastle." Or we should say instead of "Sweet as honey," "Sweet as the butter of Alberta." Let us teach our children that that nation is strongest that has the largest proportion of its people on the soil.

Everywhere in the cities there is an appalling ignorance concerning rural affairs, and a painfully unsympathetic attitude towards them. There is only one thing I am afraid of now that farmers have become politicians, and that is that farming may become fashionable, and the ladies will no longer be able to say "Poor, poor Mamie, she married a farmer." Mamie's stock has risen, and presently Mr. Drury who was to have been with us to-night will be the Beau Brummel of the town. Our Minister of Agriculture, Duncan Marshall, said once in a speech, "I came from Huron County, but never did anyone tell me in school in that county that it was a fine thing to be a farmer." And he said, "I am a big Shorthorn Breeder in Alberta in spite of the education I got in Huron County." Belgium is the best Draught horse breeding country in the world, and I find in the Belgium school books such words as these: "This horse is a good horse because his feet are sound." "This horse is strong because his back is short." When I read this I can understand why Belgium beats the world in horse breeding. Then I think of the stuff they taught me about "Cat, rat, bat, mat." Now, it is from Ontario that we get our school books, and you might just as well set this matter right for us and see that they are in terms of agriculture. I like to think of the fifteen fine Frenchmen who made up the first settlement in Canada, and on the North American continent, and of the time they entertained the old Indian Chief who was nearly one hundred years old. Every day we meet people who can talk of Joan of Arc but who know nothing about Dame Heber, the wife of the first settler in Canada? I call him the first settler, because he was the first man to use the plow.

I think most of you know there are eight Provinces in the Federation. Prince Edward Island is not yet in. Last February they formed what is known as the Federated Women's Institutes of Canada. They were not all Women's Institutes but they all came in as Federated Women's Institutes of Canada. This has been the first meeting of the Board of Directors since February. We are young yet. Our objective for the next two years is a quarter of a million, and I hope you will help on with the good work. We have somewhere about seventy-five thousand now. We have not only the largest women's organization in Canada, but the largest in the world. This movement is spreading all over Canada. Three thousand miles from where I stand to-night you will find a Women's Institute, and when the women, soldiers' wives, came over from Great Britain or any other part of the world, the superintendent will send word that "Mrs. So-and-So is coming; you will do everything you can to make her feel quite at home." The work of the organization is as wide as the needs of humanity. We are doing it very simply and quietly, and we are trying to touch human life on all points. Our chief work for this year is to see if it is possible to establish community centres in every rural district in Canada. We have started work in our Province and we now have sixty. They are not all called Community Halls; some are called Rest Rooms, or Memorial Halls. In some of the centres you will find French and Galician women and Canadian women meeting in one Institute. They all sing the one song; they have a gramaphone, and they sing patriotic songs. There may be better ways of educating the people in the English language, but I do not know what they are than just to teach them to sing our songs, and then they go home and sing them over the churn, and they are becoming Canadians. That is one of our works for this year. We have many others.

We must bear in mind, and I would ask you to carry this into your souls, that the Women's Institutes have no grudge against any other organization;

whether that organization be a kindred one or an organization having different objects. Our motto is "For Home and Country," and if any other women are working for Home and Country they are just leaving that much less for us to do.

Mrs. Graham, Brampton, presiding: "Is it well to have printed programmes or to appoint a committee for each month to take charge of the programmes?"

A Member: With us, we did not have printed programmes for a time and really our meetings were not the success that they have been since. We have had the printed programmes for quite a few years: we make out our programme for the year. We appoint our committee in March or April to prepare the programmes and choose the subjects. At the April meeting, this programme is re-arranged to meet the convenience and desire of the hostesses and persons announced to take part.

Mrs. Watt: I always used to say in England that the programme was the very skeleton on which we built up our whole organization. If the programmes were carrying out the spirit and the aims and objects of the organization, that was the strongest possible proof we were fulfilling our object of being. In my schools of instructions for Women's Institute workers, I always devoted one session just to programme making. I got some of our best presidents to write papers on the subject, who told us what they considered the programme should be, and we always had an exhibition of programmes, and always examined a great many in detail. I believe that the Institute is on a firmer foundation if it has a really good printed—or at all events, made-out, programme for a year or six months' activity. But here is the danger in that: Very often the Programme Committee or the Executive Committee or whoever is responsible for the programme, considers, when they once put it into printed form, that their labors are ended. I do not know what your experience is here, but I have often found that the case. Getting a splendid programme is one thing and carrying it out is another. It is even worse to have a good programme and not carry it out, than to have no programme at all. When the programme is printed and it is there in the hands of the members for the year, certainly those who are taking part are more likely to carry out their obligations if it is down in cold print, than if they were merely asked to speak or sing. I would strongly support the idea of the printed programme for the dignity of our work, for the continuity of our work, for the chance it gives the younger members and the individual responsibility it places on those taking part.

WHAT MACDONALD HALL IS PREPARED TO DO FOR THE INSTITUTES.

Miss M. U. Watson, Guelph.

Macdonald Institute is still doing business on the old stand. As you know, for many years now we have had a loan collection. This loan collection consists of many extracts, clippings, pamphlets, bulletins, leaflets, manuscripts and books. The contents of this loan collection is at your service. If you will write and tell us that you have undertaken to prepare a speech or an impromptu talk or an address or an essay to be read by some one else, and give us time enough to collect the material on the subject matter of your address, we will do our best to send you material that will help you to prepare that paper or that talk. We will not undertake to write a paper for you, because we think that to furnish the material is the best way of helping you to help yourself.

I may say that every year since we began this collection we have been adding to it, and it is growing better each year. A good many of you have made use of this collection. We have had inquiries, for this year, along the following lines:—

Forty-seven have written us for help on certain home interests.

Fifty for the house and housekeeping.

Fifty-four for food and cookery. You will be interested to know that the number of inquiries for recipes and cookery matters has lessened year by year. I do not know whether you are becoming better cooks or whether you are finding there are many more sources of information on that subject. I think possibly that has something to do with it, but at any rate we are not being asked for quite so much help on that particular side of the work. The inquiries that we are getting refer more to food values than to cookery, and that is a very fine thing.

Twenty-four on subjects of health.

Ten on subjects of household finance; that I think is gradually growing.

Twenty on educational subjects in connection with Home Economics.

One hundred and five on social service lines. I think that is the finest development we have had. In the early days we had practically no inquiries along this line; to-day it is the most popular inquiry.

Eleven on gardening and agriculture.

Thirty-two along patriotic lines, and

Twenty-four miscellaneous, making a total of nearly 400 requests that have come in. The majority are satisfied with a parcel of folders, which may contain clippings, manuscripts, leaflets, and frequently contain books. We have added them together, and we find that we sent out over 2,200 folders and over sixty books and we wrote many special letters in answer to special requests. We were obliged to tell a good many that the material on their particular subject was out; we had so many calls for it. No doubt, the printed programme is responsible for a good many of these letters of regret. If all of the Institute branches in one section choose the same subject for the same month, and they all turn in requests to us for assistance on that particular subject, our collection gives out. We do the best that we can, but we sometimes are obliged to say that we cannot satisfy the request on that particular subject.

Then we have referred nearly fifty requests to other departments of the College, because you must remember that while Macdonald Institute is the Home Economic Centre for the Ontario Agricultural College, there are many other branches, and if a request comes in which we believe another department of the College could answer better than we can, we immediately send it over to them with the request that they write the inquirer or send her material. We never undertake to answer dairy questions; the Dairy Department does it so much better than we can; the same way with horticultural questions, and so on. Therefore, the College can do a great deal to help you, not only in the preparation of papers but in answering questions which interest your household particularly.

We do answer a good many questions from time to time on the subject of labor-saving articles. We have sometimes been asked for opinions on certain things in the market, and we have no hesitation in answering these questions, explaining on what basis a choice should be made. Then we are beginning to get more and more inquiries on the subject of house planning—re-modelling of the house from the house-worker's point of view. You know there are a great many houses in this country that have been planned without any intelligence. In these modern days when the majority of us are doing our own work, we ought to consider time-saving methods. We do not wish to lessen the goodness of our work; we do not wish to neglect our work, we wish to house the family and feed it and clothe it in the best way possible. We cannot do to-day many of the things that were done in former days. We have to consider the things which are most important, and then plan them, and plan to use as little time as possible in doing them. And let me say here, that this matter of household financing and time-saving are very intimately connected. It is an unfortunate fact that most of we women put very little value upon our time. If you who are paying for services by the hour or by the day will calculate the value of your own services, you will find that they have a very important money value. Then when you have done that, and there comes up a question as to whether a certain time-saving machine or method is of value, just figure it out. I remember one time figuring out the value to an institution of a certain knife cleaning machine; the knife cleaning machine cost so much money, which seemed a large sum for a comparatively small institution, but when we calculated up the cost of the time of the man who cleaned those knives—he was paid by the month—we found that in less than a year we could save the value of the machine, and then we would have that machine in the institution for many years to come, as it was a machine which did not get out of order readily. The question then was merely a matter of dollars for the machine or the man's time.

I am getting away from my subject. With regard to this house planning, we have a good many plans which I think you would find interesting. Our collection contains a good deal of material now for labor-saving work. I may say also to those who are interested in the matter of physical education, and the matter of the development of plays and games, that our library has now a very fair collection of literature on this subject which I think many of you would find most interesting.

BRANCH AND DISTRICT REPORTS

ROTHSAY WOMEN'S INSTITUTE—WEST WELLINGTON.

Mrs. A. Corbett, R.R. No. 1, Palmerston, Ont.

The Women's Institute of Rothsay has become the most progressive organization in this community. It is now capable of undertaking any public improvement and carrying it through to a brilliantly successful finish.

Before the war, and in the youthful days of the Institute, our chief ambition was just this—to try to draw out, and make use of, the many talents and possibilities lying dormant in so many of our members since girlhood's school days.

To accomplish this object, we did not ask the consent of any member to write a paper, but just put her name down on our printed programmes, for some subject especially suited to her ability, and seldom were we disappointed. Occasionally, a request came with the fee to please not put her down for a paper. This request was always respected, with the invitation to come along and do something else.

The girls furnish most of the music and take just as much interest in all the usual work, as do the women. The society needs the girls very much.

When suddenly the war broke out, we first presented every soldier, whose mother was an Institute member, with a Testament, a personal letter and a $5 gold piece; and there we launched out, a body, into war work in earnest, sewing and knitting in our own homes, to the limit of our ability, but never once did we lose sight of our regular Institute work; our programme was not to be interfered with. Not even knitting was encouraged during the meetings. We were deeply patriotic, but we felt that we needed this one afternoon a month as our very own.

Since the war work is over, and after a few months' rest, our ambitions are now directed toward the improvement of our long neglected cemetery.

Our Institute Committee requested an audience with the cemetery Board, which was immediately granted with the result that the Board and the Institute are co-operating in the cleaning up and beautifying of the cemetery. This is a large task, but with contributions from the plot-holders, and several bees, composed of both men and women, we are accomplishing this excellent piece of community work.

Our president who never missed a meeting, conducts all the meetings according to Mrs. Parson's Manual. We elect a new President about every two years, but, right or wrong, the secretary remains in office year after year.

We do not know what it is to have discord of any kind in our meetings; but rather, are they made so attractive that even our city cousins try to include "Institute day" in their visits.

Our men are just as enthusiastic over our Institute Work and our Community Work as the women are. They leave their work without a grumble, and take their turns with their automobiles in transporting the women and girls to the different homes each month, nor would they be guilty of such a mistake as to set a wood-bee or other such function on Institute Day.

BURLINGTON WOMEN'S INSTITUTE.

The *Burlington* Branch of the Women's Institute has had a most successful year, having handled in all $1,092.15. We have raised money in various ways. Last fall, we held a bazaar at which we cleared $176. This fall, we conducted a booth at the Fall Fair making $31.14 from the sale of "Coney Island's" and tea and coffee, etc. We have a plate at the door at each meeting on which our members leave a small collection which proves sufficient to meet our running expenses and leaves our bank account free for patriotic or other work.

We have endowed two cots at the Gordon Home, Milton, and have offered to maintain them.

We were asked by our Town Council to handle the refreshments at the Garden Party to be held in connection with our Soldiers' Reception in August, which we did by holding two booths. We gave all returned soldiers, both our own, and from the Brant Military Hospital, refreshments free of charge, and from the sale of ice cream, drinks, etc., we made $131.54 which sum we handed over to the town clerk, to help him defray the town's expenses.

We have just conducted a Navy League Campaign by having a house to house canvass, and boy scouts "tagging" on the street. By this we raised $346.26.

Last spring we visited the Carluke Branch, providing the programme for them, and this month they have returned our visit furnishing a most enjoyable and helpful programme for us.

We have had at least one paper or a speaker for each meeting and have given special attention to child welfare work. Last spring we cut out and made quite a number of nightdresses and pyjamas for the consumptive Serbian children, but owing to the difficulties and lack of authentic information regarding the needs of the Serbians, we lack the incentive to work, and so we are finishing these garments for the Gordon Home, Milton, and expect to send a bale there soon.

It is also our purpose to hold a Children's Day early in December to take the form of a story hour, telling a story to bring out the right thought about "Giving," and having each child bring a gift for a child in the Gordon Home so that we might add whatever is necessary to make an attractive Christmas bale, not too practical a one, but one to delight the children.

We send flowers whenever possible to the sick, and write letters to both past and present members when they are bereaved or in trouble. We have had cards printed with our motto, and the words "With loving thoughts from the members of the Burlington Women's Institute" to send wherever they are suitable.

We did not make a programme for this year. We have done so in previous years, but we find it so often happens that the need for inspiration or instruction along certain lines presents itself that we would try a year without a fixed programme, giving us an opportunity to have a speaker on the referendum or any subject of interest to us.

CONINGSBY REPORT.

Coningsby, situated about fifty miles west of Toronto in Centre Wellington District, has an excellent Institute which was organized in 1906. In the first few years it was hard to get the women interested until the girls were asked to help with the programmes by giving music, readings, recitations, and papers. Now the girls feel their responsibility and help in various ways. Our membership has an average of about thirty members. All the girls attend the meetings with their mothers, some of them being members.

During the winter months, we hold joint meetings with the U.F.O., each having their business meetings separately, then followed by a programme in which the U.F.O. look after the musical part.

These meetings are attended by about one hundred and thirty and are looked forward to with interest. They are a benefit to the community socially as it brings young and old together.

Our meetings are always held in the homes of the members and lunch is served, but not at the summer meetings.

Our programmes are made in the spring for the remainder of the year, stating the place of meeting and the papers to be given, also a roll call so each member knows a few months ahead what and when her paper is.

We always have a girls' day in September. We have had a children's day, a mothers' day and a grandmothers' day, when each supply the programme respectively.

This Institute has visited other Institutes and has also entertained others, the visitors supplying the programme.

Medical School Inspection was held in this district at which Dr. Gray conducted an efficient examination.

Our New Year offering is always given in the form of a collection for the Sick Children's Hospital, Toronto.

THE EMBRO BRANCH.

Miss M. McLeod, Embro.

In presenting the report for Embro and West Zorra Women's Institute, we are pleased to state continued interest exists in all the various branches of our organization. Our meetings are well attended and live topics, educative, and interesting, are studied and discussed. Beyond this, we have had a good year financially. Our efforts were specially directed towards the renovation of our Public School, thus not only bringing pleasure to ourselves, but also to the children of the community in having clean and attractive surroundings. We have different methods of raising money. We have found plays given by home talent give good returns. Again, a community fair proved a huge success and we would recommend this to other Institutes, which may not have held one. For this, our homes were decorated to represent the different countries and the dishes served were also in keeping with this idea. Good music was furnished at all places. We began our journey at Ireland and proceeded to England, Scotland, Belgium, France, Japan, China, and over to Canada by way of United States. This evening swelled our finances beyond our expectation.

WEST OPS WOMEN'S INSTITUTE REPORT.

Mrs. E. Jennings, West Ops.

If I am to make a faithful report of the history of the West Ops Women's Institute I should have to call attention to what appears to be our greatest difficulty. This lies in the fact that we are neither rural nor urban. All the disadvantages of competing societies in the town of Lindsay are ours, while on the other hand we do not have the advantage of the enthusiasm which comes as a result of being situated in the midst of a rural community extending on all sides. We represent at best a narrow fringe of country on the north-west sector of Lindsay. Our recruiting territory is therefore small and our records in comparison with other Institutes will without doubt appear inferior.

Since the close of the war we are proposing to put our time on Community efforts and have made a beginning by furnishing a room in the Isolation Hospital at a cost of $110.78. Just recently we donated $25 to the Navy League. These sums may not seem large but our peculiar location must be remembered, the interests of the town being engaged in work with other organizations which were many during the time of war.

During the seven years we have been organized as an Institute we have had two classes in Sewing, one in Home Nursing, and shall this year probably have one in Domestic Science. Our class in Home nursing and First Aid had a membership of ninety-seven and was held in two sections, half in the afternoons and half in the evenings. This was done to accommodate country and town members, the former coming in the afternoons and the latter in the evenings. Four Institutes were represented in the members of this class. Chief among these, of course, was the Institute of Lindsay, which is an entirely separate organization from ours. There were also several members of the class who did not belong to any Institute. We fortunately had the free use of the Hall of the Department of Agriculture, and were therefore able to hand over to our Institute the sum of $26.29 over expenses from the fees of the class.

This year we have had added to our organization a Junior Institute. This movement seems to be an experiment in the right direction and thus far promises to be very useful in training the girls who form the society. Their ages vary from nine to eighteen years and they number some twenty members. They organized five years ago, just after the outbreak of war, as a "Girls' Club." Their first work was making articles for a bazaar. They bought materials for their first war work and all through the war they were busy making elbow rests, ring pillows, personal property bags, tape sponges, hot water bottle covers and filling Christmas stockings, etc. Since the close of the war the Club has changed its name and its status to some extent by becoming a "Junior Institute." The new features resulting from this change may be seen in the fact that instead of sewing the girls are now preparing papers on subjects of interest. They elect the usual officers of the Women's Institute and manage their own meetings. They are planning to have debates and other types of discussions during the coming winter; and withal the new organization bids fair to grow in numbers and maintain an increasing popularity.

Thus we feel that the work of keeping up an Institute has been worth while and we trust that this report from an organization that has to struggle for its existence on the outskirts of a considerable town, may be a source of inspiration to other Institutes throughout the Province which may find themselves in similar difficulties.

THE SPRINGFORD JUNIOR INSTITUTE—SOUTH OXFORD.

MISS JENNIE JOHNSON, SPRINGFORD.

The Springford Junior Institute was organized in August, 1916, the membership being twenty-five.

During the year they raised by means of teas, concerts and garden parties $301.

The money was spent for soldiers' comforts, socks, sweaters, etc., and donated to the Y.M.C.A., Red Cross, Salvation Army, Children's Shelter, Belgian Relief, and Navy League.

There is on hand $115, which is to be used in beautifying a park as a Soldiers' Memorial.

In September, the Institute took a Demonstration Course in Sewing which was very beneficial. In ten afternoons each girl made a house dress and a fancy dress.

The girls hold their meetings monthly and they thoroughly enjoy the Institute work.

MOUNT PLEASANT INSTITUTE—SOUTH BRANT.

Mrs. D. McPherson, Mount Pleasant.

Our Institute has been organized about sixteen years and the members seem as interested to-day in "Home and Country" as when first organized. Our membership is generally between fifty and sixty. You know a large membership does not always spell success.

We have been very fortunate in our choice of officers. We often find that the busiest housewife is the one who finds time for Institute work. We try to hold our meetings monthly and we meet in the different homes. While never encouraging sociability at the expense of the general work, yet we allow the ladies to serve light refreshments at the close of the meetings and we find this helps to get the members acquainted. We try to make our Institute popular in the community. The educational part of our work has been ably taken care of. We have had splendid papers by different members along almost every line of work and we also have speakers from outside points. We visit other Institutes and invite them to visit us. During the early years of our organization we took up matters pertaining to the home, such as cooking, Demonstrations on boning fowl, salads, etc., but of late years we have branched out to subjects of Health Education, Medical Inspection, Canadian Authors, etc. We have twice had Sewing Classes under the direction of the Department.

We have printed programmes but lately we do not print the subjects, only the name of the one having charge of the programme and one in charge of the musical part. If they do not care to take the meeting themselves they must find some one else to take the paper for them. We also publish the place of meeting.

Our Institute takes charge of the visiting for the month of June at Brantford Hospital, taking magazines, flowers, ice cream, etc. This helps us to have an interest in poor patients.

We have asked for Medical Inspection but so far have not been able to secure it.

In securing members we have a contest. Directors line up on sides and the winning side gets a prize. A new member counts ten points, a renewal five points. We have contests in candy, salads, buttonholes, etc., giving a small prize generally donated by some member.

During the war our ladies were very busy, and now that this work, we hope, has come to an end, the members thought possibly it might be hard to keep the Institute together, but am pleased to say that we are as interested as ever in "Home and Country" and I think possibly more so. We intend taking up local improvements, school questions, educational subjects, and anything good that comes along.

WEST HAMILTON INSTITUTE.

Mrs. Dummer.

The West Hamilton Women's Institute is the second youngest of the branches of South Wentworth, having been organized on March 19th, 1918. As we were organized so short a time before the war was concluded, our war work report was small, but we tried to do our share. After the first three months, we were unfortunate to lose, through death, our Secretary, whom we believe would have been the greatest assistance to us.

With our first garden party money we were able to support a prisoner of war, and then we provided a home for two little children whose mother was taken to the hospital and the father unable to provide a home for them. We then held a series of social evenings, and got many of the mothers and fathers interested, who were unable to leave their families during the day. We secured speakers to point out ways for real community service.

The next work we undertook was paving the way for Medical School Inspection. Upon investigation we found the trustees were quite willing to have the inspection. On March 4th of this year, Dr. McKenzie-Smith, assisted by School Inspector Robertson, commenced the work in South Wentworth. In our schools—Union S. S. No. 4, Barton and Ancaster, we found fifty-two cases where operations were badly needed. Reports were sent to the parents, and a meeting called for the next evening. This was very well attended indeed. Dr. Smith was present and told the parents the result of the examination and pointed out the danger of allowing the children to be left uncared for. The other speakers present urged the necessity for a clinic, and promised free operations if the parents were really unable to pay. We then made a house to house canvass of those requiring medical attention, and we found the parents generally glad to know the children could have care at a reasonable cost. We secured the hall in West Hamilton; had it made clean and sanitary, secured beds, towels, sheets and plenty of old linen. Dr. Arrell, Specialist, of Hamilton, performed twenty-eight operations, commencing shortly after eight o'clock and completing shortly after twelve o'clock. And the results have been most gratifying.

At the clinics, we secured the services of a young man in our neighborhood who had lost his mother, and a little brother was to have an operation. This young man was forced to go to work when he longed to go to school and become a doctor. This fact was brought out at the clinics, and through the influence of our late District Secretary and Dr. Arrell, the way was made easy for him, and he is now going to High School and hopes some day to do great things for our Institute.

At the medical inspection some very bad cases of mental deficiency were found, and I believe a resolution has been forwarded to this convention to have separate classes provided in our rural schools for such cases, where their influence is a menace to the class and a worry to the teacher. We believe every case where glasses were needed has been attended to, and there are a number of children ready to take advantage of another clinic.

After the clinic, we found the teachers ready to support our Institute in every thing we ask them.

On July 4th, we gave a picnic for those children who had been operated on. On September 19th, we had school sports for our school. All the parents were invited. We gave ribbons for 1st, 2nd and 3rd prizes, and the children who won these were eligible to compete in the County Fair at Ancaster. We treated the children to ice cream.

Afterwards the members of our Institute were entertained in the school room. The lunch was provided, cooked and served by the Domestic Science Class. It was decided to have School Sports an annual affair to be held on Empire Day each year.

We believe, by keeping in close touch with the school, we may be able to gain the confidence of those school children, and so perhaps have a good influence on their home life, and in time we will be doubly blessed.

BELMONT INSTITUTE—EAST PETERBORO.

Mrs. J. A. Sexsmith, Havelock.

In November, 1915, the Belmont Women's Institute was organized in the Town Hall, Belmont. This stone building looked very nice on the outside, but within were dingy walls, benches for seats and shadeless windows. Receiving permission from the Council to hold their meetings in this building, the Institute members got to work, decorated the walls, painted the woodwork, bought chairs, put shades on the windows, hung lamps, put up a few good pictures, which, with flags and bunting made the hall bright and attractive. A library of fifty good books was donated, an instrument procured, also a cupboard in which was contained our dishes—the latter for use, not ornament, and no matter how much work was to be done, the cup of tea and sandwiches and cake were never omitted.

This year we rented a room in Havelock, to be used as a Rest Room for women coming in from the country. The members had it thoroughly cleaned, walls papered, put curtains on windows, and furnished it with chairs, tables, magazines, etc. As yet we have neither hot lunch nor medical inspection in our schools, yet we have not been altogether neglectful of our children nor our young people.

At the first meeting after organization, a paper was given on the subject, "Benefits Derived from Rural School Fairs." A discussion followed, and the question was asked, "Why has Belmont no rural school fair?" By writing to the secretaries of all the schools in the township it was learned that eight of these would be willing to enter into this work. This information was forwarded to the County Agricultural Representative, with the promise that the Institute would give all possible assistance, financial and otherwise, to make the fair a success. Nine months later, September, 1916, the first Belmont School Fair was held in the park at Havelock, with an attendance of over fifteen hundred. By selling refreshments and tags the Institute made some money, which was used for patriotic work and prizes.

In 1916 one of the Institute workers organized the "Sunshine Circle," which was composed of about twenty of the young girls of the neighborhood. They met every Saturday afternoon for three hours and were taught first aid, home nursing, plain and fancy sewing, also many choruses and patriotic songs. One evening at an Institute social they made their first public appearance. When the curtain rose, twenty-one girls dressed in white with yellow sashes and gold bands on their hair stepped to the front and sang their Club song, "The Sunshine Band of Home," which was loudly applauded, as were their patriotic songs. They also helped to serve refreshments, and added much to the brightness of the occasion.

The Sunshine Circle in many ways has added to the interest and value of our Institute meetings, sometimes by giving demonstrations in first aid, bandaging, again by placing on exhibition plain and fancy articles made by themselves, and which found ready sale.

Going early to a meeting one day, one of our members sat down by a somewhat lonely looking woman. Said the latter, "I like to come here. My husband is in the hospital, and this morning I got word that my son has been wounded, but I always get cheered up when I come to these meetings, the singing seems to lift me up."

At our annual meetings our reports deal with work done and with money raised, but for the most valuable part of all our efforts, there is no measuring line, viz., the uplift, the cheer and the courage put into half-starved lives. This cannot be put on paper, but we trust it is recorded elsewhere, "Inasmuch as ye did it unto the least of these my brethren ye did it unto Me."

Many papers on different subjects have been given from time to time at our meetings, the latest being on "Child Welfare." Some appalling facts were here set forth. Let me give you one or two.

Forty-seven per cent. of the children dying in Canada under one year of age could be saved.

Sixty-seven per cent. of all diseases that afflict children under five years of age are preventable.

The percentage of children under three years of age dying of preventable diseases in Canada is among the highest in the world. Said the dying Livingstone, speaking of the traffic in slaves, "God bless anyone who in any way helps to heal this open sore of Africa." What is Canada's open sore? Is it her neglected children? Here is a field large enough for all women's societies to work in, and if those who did such splendid work for our soldiers would now turn their attention to helpless childhood no little offenders would then be thrust into jail for want of a better place to put them. No army of little children 25,000 strong between the ages of nine and fourteen would be found marching to work six days in the week in this fair Dominion of ours.

NORTH HASTINGS DISTRICT.

Mrs. C. A. Bleecker, Marmora.

Extension of Work: One new Branch organized during the past year. Country members found it difficult to attend Marmora Branch meetings, so the secretary suggested organizing at Beaver Creek. This was done during visit of delegate to summer series of meetings.

Financing: This is the stumbling block which really prevents the extension of district work. Few officers can afford to pay their expenses while working to establish new Branches or reorganize those which are in danger of collapse. Distances between Branches make travelling expenses so great that funds are altogether insufficient.

Visiting of Branches by District Officers: The District President visits each Branch once during the year. If the Branches in the northern part of the district are visited, expenses of trip take all the district funds. Secretary has not visited Branches during the past three or four years.

Medical Inspection: This has been started in North Hastings, but district officers have so far had no report on the matter, and do not know how far it has progressed. I might add that Medical Inspection has been asked for in this district for several years without results. This summer the combined appeal of district Secretary, Branch secretary and Institute lecturer seem to have brought about the hoped-for result. We are looking forward to having the work completed as promised through the coming winter.

SOUTH ONTARIO WOMEN'S INSTITUTES.

MISS IDA V. MCCLELLAN, DISTRICT SECRETARY, WHITBY.

The South Ontario Women's Institutes have nothing very new to offer. The meetings of the different Branches are always very interesting, because of the philanthropic women who attend the meetings and prepare the programmes. Some of the topics taken recently were: Discussion on Consolidated Schools, Habits and what they lead to, Punctuality, Discussion on the Referendum, and War Saving Stamps, An Afternoon with the Baby, A Paper on our Handbook and Canada. When the special courses have been taken, they were well attended. The Whitby Branch took the nursing courses—over sixty in the class. The sewing course has also been taken in some of the Branches and found most instructive and interesting. A decided interest is taken by the mothers in the school fairs.

Two Branches exhibited fruit at county fairs—Brooklin and Whitby.

The literature received from the Department is much appreciated, and the ladies make use of the suggestions offered, and find the new methods a great saving of time and labor.

Nine out of ten of the Branches were represented at the District annual meeting. A motion was passed that we ask for a lady representative for our county, which we hope will be considered.

A dress parade of dresses made during the sewing course was given by the Brooklin Branch at the District annual meeting held there.

NORTH GREY DISTRICT.

MRS. DUNN, MEAFORD: We, like all other Institutes, have devoted considerable time and energy to Red Cross work and home relief work. Almost all of our eleven Branches have contributed to the needs of the Children's Aid Society; seven Branches have sent donations of money, vegetables, canned fruits, quilts, linens, children's garments to the Grey County Children's Shelter, and have got the young girls interested so that they have a concert or other entertainment to raise funds for the Shelter. The General Hospital, Owen Sound, is also remembered by donations of money, barrels of apples, canned fruit, jam, and linens. Three of our Branches have furnished wards and maintain them. Others are improving conditions of school grounds. St. Vincent Women's Institute is preparing to install an equipment in their two rural schools whereby a hot lunch may be served to the children at noon hour during winter months. Meaford Women's Institute is improving the park along the water front by placing a dressing station or bath house at the disposal of the children. We intend placing a couple of swings and a teeter in the park next spring, making the park an attractive play ground.

Meaford Branch serves afternoon tea at Fall Fair, thus interesting the young girls by having them serve the lunch. In this way we realized $30 for our work, besides being an attraction for the fair.

Meaford and *Owen Sound* had successful short courses in Home Nursing and First Aid. Many were the expressions of appreciation of the valuable knowledge gained from these lectures.

We have a Girls' Institute at Clavering who are alive to the advantages of having good programmes. They had a banker explain banking system. Doctors gave addresses, etc. They had darning and button-hole contests on white cotton, giving prizes for best worked button-hole in ten minutes. Ladies still take their knitting and knit while programme is being given. Clavering and Shallow Lake are arranging to hold classes in sewing.

At our annual meeting in June the District President was urged to visit Branches during the year. Also we decided to tax each member a small fee, so that the President's travelling expenses could be paid. All are responding to the appeal.

Many Branches are collecting for the Navy League.

Meaford ladies are putting on a musical entertainment in aid of the Public Library on 27th and 28th of November, and we hope to continue our work.

THURSDAY, NOVEMBER 12TH, 1919.

MRS. JAS. GARDNER, Owen Sound, presided at the afternoon session, and said: If the women of any community after their experience with their power of organization and unselfish effort in war time, permit old conditions and methods to be resumed, they have failed to grasp the great lesson. In war time, we found time for war work. Can we not find time in peace days to do an equally important work to aid in making this country of ours a more livable place for all its people by all working together?

The report of the Western Ontario Convention was presented by MRS. JAMES PATTERSON, of Gadshill, while MRS. R. V. FOWLER, of Perth, presented the report of the Eastern Convention.

DISCUSSION OF DISTRICT WORK.

MRS. J. E. BRETHOUR, Burford.—One beautiful thing that the Institute work has done is to teach us to be tolerant of one another's opinions. You have as much right to your opinion as I have to mine. What might be good for one district might not be good for another.

Anyone who just reads the "Duties of District President" in the handbook and thinks that is all she has to do will have a very weak district. You have to do everything laid down for you there, and "then some." You have to carry your work in your head waking and sleeping; you have to dream dreams and see visions. Certain things which I talked of in the early days of my Presidency, and which almost seemed impossible, have now come to pass, and I am sure that has been the experience of all District Officers.

The relation between the District President and Secretary must be the most confidential and most amicable. At the convention in London two years ago, one District President came up to me and said, "My Secretary won't call a meeting when I tell her." No district can flourish under such conditions. Another thing to do is to plan your work. Plan your work, and work your plan. Never lose sight of that. Put an objective in front of you, and plan it all, and then start in and work out the details: the success of every large enterprise is looking after the little things. Any society of this sort must be a mutual improvement society.

We must look very carefully after the business end of our work in the district, because everything in this work-a-day life, if it is to be a success, has to be carried on in a business-like way. I remember being at a meeting in my own district, and there was not a single thing that the officers expected to be on the programme that materialized, so I had to help out, although I had expected to sit at their feet and learn. I would have on hand an emergency programme.

Mrs. Smith, President of Norfolk: Some of the counties have large centres where there are hospitals or other worthy objects for county work. We have not that to combine our branches, but I do think it is a good thing if there is some one object in the county for all the Branches to work for. I might suggest to any Branch that is situated as we are in Delhi, where we are not entitled to help for School Fairs, that you work out a good School Fair of your own, as we have done. I did not think it was fair that our children should lose the pleasure and privilege that the country children have through School Fairs, so we went to the Branch to see how much they were willing to guarantee towards the prize money, and they said they would put up $25, and the School Board said they would give us $10, and the first year all we had to put up in the end was about $2. We charged 10c. admission, and the people attended in great numbers. We held the fair in the basement of the school, and the School Board came to us afterwards and said, "This is a great success; we will have to have another one." This year we launched out on a greater programme. We modelled it from the Township Fairs to a great extent, and added some Field Day Sports to it, and we find it is going to be a great community gathering enterprise in the future. I would certainly recommend it for any village; it brings the parents into the schoolhouse, and they take an interest in it, which they never did before. If you get them there once, they begin to think about it.

Then we are anxious to get a Community Hall in our district. Another thing I think the Institutes should take up is the Chautauqua movement throughout the country. We have had three in our village of 700, and we have come out on the right side, financially, every time. It was hard to guarantee the $450, but these wonderful lecturers and artists who came to us through the Chautauqua were well worth the effort we put into it.

Sometimes there is a difficulty in financing the district work. We have adopted a plan of taxing each branch $1.00. That is not very much to any Branch, but it does help out the district funds, and in many cases the district officers are not so situated that they can afford to hire cars to take them to all the Branches, and pay it out of their own pocket, and I am not sure that they should have to. If they give their time and effort, the district should finance their expenses. Of course, we get a small county grant, and a little grant from the Government, so that our district officers manage to get to every Branch once a year, and oftener if they send for us.

We have adopted a District programme this year. It costs only about two cents apiece for 400 or 500 good-looking programmes, which would cost us five cents apiece if printed for each separate Branch. Some branches hold their meetings the first week of the month, others the second, and others the third or fourth. We find if we have a strong Branch holding its meeting the first week, the papers are sent to the secretary, and if any of the other Branches want these, they are forwarded. That helps to get a subject dealt with in some of the weaker Branches where they do not feel able to undertake papers.

Mrs. Brethour: In South Brant we have stayed with the hospital work; we are building large additions to the Nurses' Home. You heard the report from Mount Pleasant; they have always taken an interest in the hospital, because they are near Brantford, where the hospital is, but some of the other Branches did not know anything about it, until we encouraged visiting the hospital. Last year was the first time we tried it, and members from all the Branches visited the hospital in the month of August. To some of them it was a perfect revelation; they were simply amazed at how glad the friendless patients were to see them and how they appreciated the boxes and flowers they brought. At the end of each month we used to give them cake and ice-cream, but no one wants to be in a hospital a month if he can help it, so now we give a weekly ice-cream treat, and the women of the city and country who are doing it are brought very close together. It is a good thing to have that hospital work, for our Red Cross work is pretty nearly over. I wonder how many of the Branches have been adopting French and Belgian children? The Burford Branch have a little French girl, and they receive beautiful letters from the mother telling them what a joy it was to have this money to be able to send the little girl to school and still keep her at home. It is a good thing to adopt a child.

Miss Kate McIntosh, Peel: At the present time our big project is getting our school nurse established. A year and a half or two years ago we completed medical Inspection, and as follow-up work, a school nurse was established in one township. This proved so successful that we have decided on it as our big Institute project for the District. Each Branch has been asked to support it financially. Already, the south of the county, with Port Credit Branch as the moving spirit, have raised $900 by a carnival at the home of Mrs. Hobberlin, and of this $622 is clear. We are divided into two other sections, the centre and the north, and they are working for this. The school boards are also helping, and from them we have met with no objection, although in some cases we find it would be better to have the School Board responsible for the transportation and board of a nurse while in that district, instead of getting an actual cash donation from them; letting that be counted as their part of the contribution. Of course, the Women's Institute assist also in the board and entertainment of the nurse while in the district.

Last week we completed a two weeks' special survey in the county. A doctor and a nurse visited the schools again, and compared present conditions with the reports made two years ago, which was very interesting. You would be surprised at the number of children who still need attention. The comparison was really appalling, because in one district of four schools where we had had medical school inspection, and followed it with a dental clinic, twenty-one out of twenty-seven still required dental attention, and we found the same condition prevailing throughout the schools. While both the doctor and the nurse said that the health of the children and the surroundings were very much better than they were in the other counties where no previous work had been done, yet the results were so startling that we believe the furthering of health work cannot be pushed on too rapidly. We find the Junior work intensely interesting, but the biggest thing we can mention is furthering the health work in every possible way.

A Member: We have a small hospital in our town, and the wards are furnished by private parties, principally, but the District Institute furnished one ward, giving the linen and the various furniture pieces required, and every year or two we try to contribute something towards that ward in the way of replenishing the wear and tear.

MRS. BRETHOUR: We have already done some work of that kind in South Brant. I was simply shocked at the shabbiness of one of the wards, and I was told it was a Fraternity Ward; the Fraternity had furnished it and then left it and nothing had been replaced for many years, so in 1915, when I was elected District President, my first thought was to have the South Brant District furnish a ward in the hospital, which cost $100 to furnish, and $25 each year for upkeep. Some Branches prefer giving their own donations, but usually in a hospital, they want the linen uniform, and we found it better to give the money in a lump sum.

I have also been trying to get the women interested in a yearly rummage sale. This year I knew perfectly well there was not a farmer in Brant County who, when he was having the potatoes dug, would not contribute a bag to the good cause, and next year I am going to take orders from the ladies, and let the money go toward the hospital. I think we ought to bring in a couple of hundred dollars in that way.

A MEMBER: In South Norfolk, there are three schools that have an average of four pupils. This question of consolidated schools should be taken up on our programmes; we are beginning to feel more and more that the trustees must be approached and the whole question tackled.

A MEMBER: In our locality we advocated community halls; at the same time we need the school, and I am trying to agitate for the school, and advising not to be in a hurry about the hall, but if possible to combine the school and the hall.

MRS. BRETHOUR: We have been told a good many times the school should be the centre of the community, and if the school were built with a hall in connection with it, it would be a great asset for the community.

A MEMBER: In East and West Victoria we established a rest room that is used very largely. Our branches pay so much a year towards it, and it has been a source of great comfort; it is very largely patronized. We have it over a store, and they supply everything—the caretaker and the heat and light and everything. In our district, we cannot make our income meet our expenses, and we have to do a good deal of missionary work. I would like to have suggestions this afternoon: I think I have to visit my branches pretty often and do extra work.

MRS. BRETHOUR: I do not know whether a petition from all the districts to the Government to give a larger grant would have any effect, but I do know it is very difficult for the district officers, without spending some of their own money, to visit the branches during the year. In South Brant we have a semi-annual meeting for the district, one at the end of October and one in June. We ask the President and Secretary and as many delegates as possible from each branch to attend and to give a report, and we had some very interesting talks. All the branches brought suggestions for the winter's work and asked for advice, etc., and the Burford ladies provided the tea. We have found these semi-annual meetings have been of the greatest benefit to the officers in planning the winter's work. We all have our conventions in June, and by September some of the plans we have made have cooled off, and we need a warming up to begin the winter's work.

Q.—How many sessions do you have at that meeting?

A.—Just one; we meet at half past one. At our convention, in June, we have two sessions—a business session in the morning and then the convention proper with the speakers at two o'clock.

A MEMBER: In South Wentworth, we appealed to our County Council, told them what we were doing for the county, and that we must have some money, and we got a grant of $50 to assist us in the work.

A MEMBER: The West Simcoe Women's Institute appealed to the county and got a grant some years ago of $25, and even then, the branches are so far apart that it means great expense, so we tax the branches at the rate of 10c. per member. We also purpose having a district picnic next year, but of course we won't make money at that.

MRS. BRETHOUR: I think most of the county councils would give a grant; in Brant we have had one for fifteen or sixteen years of $25 to North Brant and $25 to South Brant.

A MEMBER: We are trying to have a rest room in the Town of Huntsville; but we do not know how it is going to work out yet as we are in our infancy. Each branch is giving $15 towards its support. We thought it would not be a good idea to have it over a store, because one storekeeper would not like it being over another store, so we rented two rooms in the central part of the town, and the woman who lives on the same floor will light the fires and keep the rooms tidy for $5 a month; we pay $7.50 a month rent, and we are hoping it will work out well. One man in the town gave us $15, and we collected $10 from among some others, and that is all the help we have had from the town so far.

A MEMBER: We have been keeping up a rest room for seven or eight years in Norwich. Our Institute raises the money for the rent of the room and the town gives us a grant of $25 a year, and the policeman takes charge of the fires and locks the building up. It costs us about $200 a year, but we have no trouble in raising the money, and we have it situated near the stables where the women can easily get their horses.

Q.—What furniture have you got in your rest room?

A.—We have a table and chairs and a sewing machine.

Q.—Do you pay your policeman anything?

A.—The council pays him.

A MEMBER: I would like to tell of the rest room I found in Chilliwack, B.C., some years ago. They had a toilet, which I think is necessary in connection with every rest room; they had couches, and little chairs and tables for the children to play at. The furniture was plain but nice. They had a small kitchen with a cupboard, and they had tea and sugar, and the members of the Institutes or the girls in the stores could go to that rest room, have a cup of tea and eat their lunch, and have a comfortable social time. One of the members of the Institute spent every Saturday in the rest room, and took charge of the children while the farm women went and did their shopping. Then the ladies told me that it was quite a little meeting place for them; women who were so unfortunate as to have no children and whose husbands were in business and working Saturday nights, would bring their fancy work and meet in the rest room, and then their husbands would call for them when they closed their stores. In that place where they had thought there was absolutely no need of an Institute, in two years they had this rest room and they very proudly took me to it, and I remember very distinctly what a great blessing it was to them.

Q.—What size is that place?

A.—It is just what you would call a nice little town, probably it is not even a town. They had an oil stove, and tea and sugar, and everyone could help themselves.

Q.—Do they not serve tea in the Galt rest room?

A MEMBER: Yes. I happen to be one of the committee there. They serve tea and you can also buy a sandwich along with the cup of tea.

Q.—You have a permanent caretaker?

A.—Yes, and we have a couch and two rocking chairs and a library table, and a few books and papers and magazines. We find it very convenient, and the country ladies make a habit of giving 50c. or $1. They have a card on the wall, and you can put your name down for so much, and everybody can see how much you are giving. One Institute three years ago donated $50 to it.

Q.—If a District President has to go twenty miles to visit a branch, and if there are no funds in the district, should the President pay her own expenses, or should the branch that invites her pay her expenses?

Mrs. Brethour: I think the branch that invited her should pay her expenses. If she is worth sending for, her expenses should be paid. There is no cut and dried rule for that, and each District has to work that out for itself, but the President should not have to pay her own expenses.

The Chairman: At our last annual meeting in North Grey we put on a tax of 10c. a member which is handed to our District President, and she keeps account of it and gives us a report at the end of the year. That pays her expenses from place to place.

Mrs. Brethour: I have just one thought to leave with you:

True worth is in being, not seeming.
In doing each day that goes by
Some little good; not dreaming
Of great things to do bye and bye.

DISCUSSION OF BRANCH WORK.

Mrs. W. J. Hunter, Brampton: After our war work was concluded, we found the branches asking what work to take up; this was particularly the case with branches which had been organized during war time and who knew little or nothing of the work of the Institute previous to war days. I have visited some branches since the war has ceased, and they have told me of their splendid endeavor for the war, and said now that the war was over, they were tired. Yes, we were all tired; the world was tired, but because we were tired, did not mean that we should cease. I think that applies in our Institute work just as truly as it does in anything else in life. When the war ceased, all the rest of our work just began over again, and began with renewed vigor, and renewed earnestness and renewed responsibility.

The first thing I want to speak about is retaining the patriotic workers in the Institute. Every branch secured new members because of the patriotic work; some branches were formed for that purpose. Are we holding these members? That is one of the first things we should think about, because there is no room in Canada to-day for any woman to again play a lone hand—to settle back in the circle of her own little interests and her own little affairs and pay no heed to the world at large, and it behooves the members of the Institutes to see to it that every woman is impressed with the necessity for her work.

A member: At present we open our meeting with sometimes only two or three present, the number growing as the meeting goes on. We found we might be an hour late in starting if we waited for some members to come, but when we begin early we can finish early so that we will get away in time to attend to the household duties.

A Member: When our Institute was organized, the organizer told us to have the President call the meeting exactly on time, and we have always done so, and we are always there.

A member: We wait until we have about half the members there; we have a membership of sixty, and very often they are there on time. I suggested that they be fined five cents if they are not there on time, and it livened them up a little bit, but we always close at five so that the ladies can get home in time to get the evening meal.

A MEMBER: To encourage the officers of our Institute to be prompt, we have started calling the roll immediately after opening, and if the officers are not there they are reported absent in the minutes and the report given at the annual meeting.

MRS. HUNTER: Regarding business-like methods, I am afraid we do fall down in this matter quite often. Let us all try to improve. We have that splendid little manual of Mrs. Parsons that we may have in each branch, and it is more helpful to us if we carry on the meeting in a business-like way.

I would like to ask for a show of hands of branches where you have a Board of working directors—directors who are expected and do help to carry on the meetings, and to supplement the work of the officers. The reason I speak about this is that occasionally there comes in a request from the Department for some help for a branch that they fear is about to be disbanded, and what do you suppose is the reason given?—because they cannot secure officers. I do not believe there is one locality in the Province of Ontario where there are not talented women capable of being president or secretary or filling any other office in a branch.

I think it would be a good idea to have a class on Parliamentary rule in every Institute by a leader who has studied the rules. You would then find you would have no trouble in getting your officers.

A MEMBER: We have found it is no use, unless they are ready to take office, to put them in and keep them at it.

MRS. HUNTER: I believe in a great many of our branches, our officers are overloaded with work. That is why I am asking if you have working directors. I do not believe that the President and Secretary should have everything to look after.

A MEMBER: Each one of the members in the Institute should hold office at some time. This year we appointed a committee to look after the money; we used to let the Secretary do it, but it was too much. We are trying to get more to take an interest in the work, but it seems to be left to one or two. However, this year we are having more success in that regard.

A MEMBER: Don't you think criticism is the reason for people not accepting offices in the Institute?

MRS. HUNTER: That is a reflection on our loyalty to each other, but I feel there is a little truth in it in our Institute work, as well as in our other work. We elect certain people to do certain things, and then we proceed, after they are in, doing our work, to criticize them. I believe a Board of good working directors and committees for special work is the best thing.

A MEMBER: The Women's Institute could request the manager of the moving picture theatre to show something of educational value for the children on Saturday afternoons. They should also get in touch with the Agricultural Representative who has a collection of suitable films.

DR. MARGARET PATTERSON extended greetings from Lady Eaton, coupled with an invitation to come to see her greenhouses any time during the Convention.

THE CHAIRMAN suggested that the 14th of February be set apart as a general rally day for the Institutes, when the husbands and friends are invited, and to be known as Federation Day.

MRS. HUNTER: There seemed to be some vagueness in the minds of the ladies as to how they should set about to secure certain good things which had been promised to them; one was medical school inspection. Some had the impression that this would come to them without any effort from the local branches, and I think I should say right here that in the matter of medical school inspection, the question of consolidated schools, child welfare work and public health, and anything of that kind that we want, it is the Women's Institutes in the majority of cases that must take the initiative. We are expected to do it; we have taken the position that we are willing to further this work, and the public is looking to us to do it.

A MEMBER: I feel if this work is taken up it will solve the question we were discussing a short while ago, as to the difficulty in getting members to take office in our branches. During the war there was no difficulty in getting women to take office, because all our branches were so anxious to do the work that had to be done; we felt it was worth while. It did not make any difference what sacrifice was required, we left our work at home and went to our meeting. Now we fell sometimes that our work at home is more important than to go to the meeting, to listen to a paper or a speech on some subject, and I feel sometimes the programme of our meeting is not worth while; we enjoy it and we meet one another, but we feel we are paying a little too much for it. If we are taking up child welfare work or medical school inspection, if we are bettering the public schools, if we are doing any of these things, I think our women will come out and will work as hard as they worked during the last four or five years.

MRS. HUNTER: Let us be impressed with two or three things; first of all, with the need for our work; secondly, our responsibility to do the work, everyone with her own talents, and then last of all, think what we are working for—this wonderful country in which we live, and the children, the future of our country. Then I am sure we can each feel our own responsibility to the Home Land the same as we do toward our individual homes.

A collection was taken up, amounting to $57.27 to be used in defraying the expenses of the convention, the balance to be placed in the treasury of the Provincial Federation.

MRS. BECKER expressed the thanks of the Ontario Referendum Committee for the splendid work the Women's Institutes of Ontario did during the last five months' campaign.

MRS. EDITH LANG advised those who had purchased her book "The Handy Guide to the Laws of Ontario" to secure the supplement, which is a 15c. pamphlet, as some of the laws have been changed. The Franchise Act is quite different to what it was last year. Women are now able to sit in Parliament, or on School Boards providing they are farmers' wives or daughters over 21 years of age, or if not, providing they have the necessary property qualifications.

One of the greatest changes in the laws this year has been the alteration of the Naturalization Law. Canada is the first country in the world to give a married woman a nationality of her own. In the olden days, a woman took the nationality of her father until she was married, and then she took the nationality of her husband; now Canada has given a woman the right to say which nationality she belongs to. She can take out naturalization papers as if she were not married. You cannot imagine what great consequences that will have in Canada.

The Theatres and Cinematographs Act has been amended so that now no child under fifteen years of age unaccompanied by an adult may attend a movie or other show for which an admission fee is charged, except on Saturdays and public holidays between the hours of 9 a.m. and 6 p.m., during which hours a matron, paid by the exhibitor, shall be on duty to supervise the conduct of such children and of adults towards them while in such theatre.

You have a vote in spite of any property for the Province and for the Dominion, but not for the municipal elections. I would say get on the registry as quickly as you can get your husband to transfer the property into both your names. Most husbands are quite decent about it. You need very little property in the country to get on. You can buy a legal blank form for a transfer of property, fill it out with your husband, take it to your municipal clerk, and then you are both on the registry.

Mrs. Henry Osler, Toronto, made an appeal on behalf of the Franco-Canadian Orphanage, which was founded in 1916 by Madam Guerin. The first idea was that these children all being the children of soldiers who gave their lives for France, the Orphanage should take the place of the father. Therefore, they conceived the idea of a godmother, the godmother being the Canadians, either an individual or a society of grown up people or of children.

The children there live in most beautiful surroundings; they have most delightful nurses, in many cases the nurses are mothers. When the child is six it attends public school. There is no interference with its religion; if a child is a Catholic, it goes to the Catholic Church; if it is a Protestant, it goes to the Protestant Church. There is nothing sectarian about the institution at all. One of the great advantages of this situation is that the schools are excellent. When the child is thirteen years of age it attends the technical school which is in the Orphanage. There it is taught to earn its living in some trade that is likely to be attractive to the child, and the French are extremely clever in doing anything with their fingers. We are teaching the children how to become self-supporting.

The Manager of the Dominion Bank, corner of King and Yonge Streets, is the General Treasurer for the Canadian Branch. It costs $115 a year to maintain an orphan.

EVENING SESSION.

Dr. Helen MacMurchy, the Chairman, in introducing **Mrs. Watt**, stated that in recognition of her splendid services in establishing the Women's Institutes in England and Scotland and Wales, His Majesty, the King, bestowed upon her the order of "Member of the British Empire."

ADDRESS.

Mrs. A. Watt, M.A., M.B.E., Founder of Women's Institutes in Great Britain.

The Order of the British Empire was not given to me, I am sure, personally; but because I was a Canadian doing a special kind of war service which appealed at that time to the English people. I am sure in giving me this honor it was meant to signalize the appreciation of the authorities in England and His Majesty, with the work of the Women's Institutes in England, and in a way to note their connection with the Canadian Women's Institutes. For that reason I received the honor quietly, because I felt that you had all shown me the way.

When I first started work in England there was a very serious condition of affairs. After war was declared, not many people understood that the food question was going to be a serious one, but I was informed by those whom I thought should know, that the matter of food would be a deciding factor in the war. If the Germans succeeded in sinking all the food ships coming to England, we should not be able to support the population, and we should have to surrender before we had been defeated on the field of battle. It seemed to me that I could do no better work than to try to organize in rural communities something which would help with the food supply. My work had been with the Women's Institutes in British Columbia, and I felt that that organization might well be introduced into Great Britain. But unfortunately, perhaps for the first time in my life, I seemed to be the only person that thought so. I was asked to speak very often, and I think they liked the sound of my Canadian accent, and they were interested in what I was saying, but for a long while I made no headway. I spoke to London audiences quite often, and spoke to large audiences of people, and I always spoke of the Canadian Women's Institutes. They said they might do for Canada, but they would not do for England. After I got them established in one county, everybody in the other county said "They may do for that county but they won't do for this county." Things start from London and radiate out in the country, and nothing can be started without first getting it going in London. Therefore, I had to spend nearly a year battering at the doors of the people in London, talking to London audiences and introducing Women's Institutes to Boards of Agriculture. I also had to talk to educational bodies and to editors of rural papers and people interested in land problems, women who were training women, gardeners, heads of schools; everybody whom I thought might help me to get Women's Institutes in their village. The women of England were certainly not getting a fair show in life, and I wanted to do something to help them. Finally, an open-minded gentleman, Mr. Neugent Harris, heard me speak on co-operation. The Chairman at that meeting was Earl Grey, late Governor-General of Canada, and with that fine appreciation, which was his characteristic, he at once asked the audience to consider what I was saying, and see if something could not be done to start Women's Institutes in England. I well remember his words, "Mrs. Watt has the advantage of coming from a country where agriculture is a matter of national concern, I wish that were so in England." Mr. Neugent Harris heard me speak at that meeting, and made up his mind he would try and help me start Women's Institutes. He was General Secretary of the Agricultural Organization Society, and he asked them to give me an opportunity, through their branches to start Women's Institutes. His Society agreed to do so, although he was the only enthusiast among them, but he was a good talker and he talked them into it. I made some study of their methods of work and their organization, and in my innocence of mind I thought the wives of the Directors would be interested in Women's Institutes, but after six months of vain endeavor, I found out that the wives were not likely to be interested, since they were not in the least interested in the Agricultural Society. Whatever their husbands might be doing, the wives neither cared nor knew anything about that particular branch. Most Canadian women know what their husbands are doing, but I found it was not so in England, and that was a blind alley that I had been following for six months. In the end, I succeeded in interesting a gentleman in Wales, the Hon. Richard Stapleton Cotton. He had to be taken around in a bath chair, but in spite of that he spoke all over England. We at once agreed on a policy, and he got an Institute started in a little village in Wales in 1915.

That Institute was the first uniting of the classes in that community. It brought together the church people and the chapel people. They came together in this Women's Institute, although they never worked together in anything before. Two years after that Institute was established we went back there, and a lady in the neighborhood handed me a cheque for $1,000 to give to that Institute, because she said she had never seen anything do so much to bring that community together. I can assure you that Wales is almost as famous now as the home of the Women's Institutes as it is as the home of Lloyd George. At the first meeting I held in Wales, Mrs. Lloyd George telegraphed from London and said that if I wished she would come up and take the chair, and she did, and she made a very fine speech in Welsh. We got the Institute started, and there was a most remarkable condition of affairs; there was beautiful land sloping to the sea, with a climate that is almost tropical, the warmest part of England, and yet there was practically no fruit or vegetables produced on the whole slope of land. It was a light, sandy soil with a clay subsoil, and yet the whole of their supplies in fruit and vegetables came from other parts of England. We worked very hard to see what we could do, and in less than two years, through the work of the Women's Institutes, through their demonstrations in seeding and planting and fertilizing and so on, they are able to rase all they require and have a surplus to ship out, and they established a co-operative market to handle the produce and last year they turned over in that co-operative market $20,000, and that was run entirely by members of the Women's Institutes.

I went from Wales into Sutton and Dorset and there we started a few Women's Institutes—I think some fourteen or fifteen in 1915. It was very hard work, and I had to go back and back again, because nobody knew how to run these Institutes, and nobody could contradict what I said, and therefore I could have exactly the sort of Institute I wanted. I made it quite plain from the start that they must have their meetings attractive, and showed them how.

During the next year, we got considerably further with the organization. I remember going to one county where they had an Agricultural College and the county was very well organized; they had two or three co-operative societies and a number of good farms. It was distinctly a rural county with no big towns in it, and everybody was apparently favorable to Women's Institutes. I went to stay in the house of a friend who was very anxious that Women's Institutes should be very largely introduced into that county. He was willing to train people and to open his house to them and to help in every way, and he said we must have the co-operation of all the agriculturists in the county. He had people for lunch and breakfast and tea, and we worked between times and they decided that Women's Institutes might do for Canada but they would never do for England. We had nobody to back us up at headquarters like you have Mr. Putnam here. We had no money, no literature and no organization, nothing to help us, and it got to be rather monotonous, being pushed from one county to another. During 1916, I did a great deal of educational work. I spoke at a number of Ladies' Colleges, and I must say the people liked to hear me talk, and I had far more invitations to speak than I could accept. During 1916, I got the help of a number of good women, Mrs. F. T. Godman, who is with me, and others, and she said "Never mind, we will do it yet." I got various Canadians in England to help me and we got going well by 1917, and we began to get a little encouragement. A great many notable women came into the movement, and in 1917 something very interesting happened. I told them the Women's Institutes was a Department of the Government in Canada, and they said: "How did you get the Government interested in Canada?" and I said: "I don't suppose you will ever get any assistance from your Government, because the British Government never encouraged women," and I never dreamed that there would be any help secured from them. However, in 1917 an invitation came from the Board of Agriculture to make the Women's Institutes a branch of the Government. There had been no effort on our part, it simply swept down upon us, and took us in, and from that day we began to grow very quickly. At that time, we added to our organization your Miss Guest, and in a very short time there were 135 Women's Institutes, and by the next summer there were 500, and before the end of the next year there were 1,200, and I don't know how many there are now. This was not all done at once, and from first to last, side by side, we had to build up our central organization, we had to get literature and everything else. The English people are really born organizers, and the central organization went on more rapidly than I expected, and I was desirous of not having the whole thing controlled from a central organization. I would not let the Women's Institutes be called a branch, I insisted that each should play its own game.

After we had been going some time we had to get more organizers, and I was able, through the efforts of several Government officials to inaugurate a system of Women's Institute Schools, and in these schools we trained organizers and secretaries and presidents and committee members and committee workers. For the last year, practically all I was doing was training organizers in schools. The year before that I was speaking to large county committees and conferences and conventions to try and carry out our big educational programme, but the times I liked best in England were the times when I was actually speaking to the Institutes themselves. In the English Village they have all sections of the community, people who live in very large houses and people who live on large estates, and people who travel and come back and give the Institute new ideas. Then they have people who are working hard on the soil and who are bringing splendid agricultural interest into the meeting. Then those who are living retired lives in the village are always glad to speak. There is no lack of good speakers. Then at every village in England something wonderful has happened; pilgrimages can be made to shrines in every locality.

I do not think England knew or cared much about the Empire before the war. It was my glorious and wonderful privilege to see the dawn of Empire in rural England, to see people's faces change and to see audiences change under the wonderful influence of the spirit of Empire. The wonderful welcome I got in most English villages was most touching. They were just realizing all the time that there was an Empire, that there were other people beyond the seas that talked the same language and who were animated by the same feeling and who talked about the little homely things of life in a language they understood. People used to say, "We do like to hear Mrs. Watt speak because she is so simple, we understand everything she says." Nobody had ever talked to them in England as woman to woman. I have been preached at all my life and it has never made me any better. These people had a resigned sort of feeling before I began to speak, as they had no idea what I was going to say. However, my Canadian accent woke them up to begin with, it was something quite new. Then I had a collection of the most wonderful stories that I told them. They all had to do with the little things of village life; I was not at all dignified, and nobody had been undignified before. I was not a bit anxious about what they said. I was not asking them for anything, and I did not care whether I spoke well or not. There were a lot of women in front of me who had never had a chance in their lives, they had always been sat upon by their husbands or their children, or the lady of the manor, and none of them had had a chance to say what they wanted to themselves. I was determined that if I did not do anything else, I would give the women in the English village a chance to say what they wanted to say. I believe they did get that chance. I saw for four years the development going on in a village in Sussex, where I lived. I saw the women of the village absolutely changed. When we left and were about to go away, every woman stood up and told things about us. They said they had all been treated in the same way. You have always spoken your minds in your homes and in the church and in the school, but the English women did not do that, but through the Women's Institutes they are beginning to do it now.

Before I left England I had a wonderful experience. I had asked the Government to send me to Belgium. They had taken the Canadian Women's Institutes as a model. They had visited Mr. Putnam at the Parliament Buildings here, and I don't think anyone had visited them since. The visit was delayed by the Belgian Government until two weeks before I sailed, but the British Government said "We will send you nevertheless," and they sent me to Belgium and paid my expenses. Unfortunately all their proceedings at the Women's Institutes were conducted in French and I cannot tell you much about what they said.

Their organization is most interesting. Most of the instruction is given by the nuns from the Convent, who are nearly always the secretaries. The priests are very sympathetic. There are some Protestant Institutes in other parts of Belgium, but I did not meet any of them. They have expert instructors in domestic science and agriculture, and the departments are well run. They have reports and a great deal more literature than I have seen from any other Government. While I was there I went every morning to a School of Rural Science and Rural Economics, and when we were about to leave they handed us a printed report of the proceedings of the week. Of course, you are all expecting just what I expected and found, and that was that the women members of the organization were not having very much to say, it was too well managed. I could not say that the members were developed, they were not talking in the meeting. They were given papers and recipes, but they were not actively interested. Everything was being done for them. They had two sets of members, the active members and the honorary members, and they had two Presidents, the active President and the honorary President. I took a quotation from one of their programmes:

> "The education of women is of primary importance, for it is that on which depends the education of men. Man is the head but woman is the heart of humanity; he has reason and she has sentiment, and it is sentiment which forms the character. The moral qualities of women are piety, kindness, modesty, patriotism, domestic order, propriety, activity, vigilance, exactitude, desire for economy and order; these are the virtues of women."

I worked in Belgium until August 13th and I left England on August 15th. I had a trip over the battle fields arranged for me by the Belgian Government, and it was very interesting indeed, but it was a terrible sight, and I don't think I will ever recover from it in all my life. The very saddest thing of all is that they are already making arrangement for tourists, and to run excursions, and it seems to me that it should be kept forever sacred. I would advise you to consider very carefully whether you want to see it or not, because it will leave with you all your life a very sad memory.

ADDRESS.

Dr. John Waugh, Chief Inspector of Public Schools, Toronto.

The Women's Institutes is a unique organization; we have our Red Cross Society, the Imperial Order of the Daughters of the Empire, the White Ribbon Society and all the other societies, and they are all trying to do some little bit of good in the world. The Women's Institutes differs from all of these, because its mission is not specified nor limited to any one area of social and human activity. I think that the person who invented the Women's Institutes must have made for it the motto, "Whatsoever thy hand findeth to do"—because you are in an absolutely unlimited field seeking to do good in every direction—"do it with all thy might," and you have done this work nobly, and for that reason more than for any other, I have taken upon myself the very unwelcome task of trying to address people who have done so much, especially for the sake of the little children who are your charge and mine.

The Women's Institute seems to me to have a most interesting background. I do not know how the Women's Institute arose, but I do know that its rising seems to have been due to the instinctive consciousness of civilization, due to an all-providing Providence. Twenty years ago, the Women's Institutes did not take hold of the popular imagination; they exercised no considerable power in the community until a few years before the war. From that time on, their influence has been growing and increasing until now it is difficult to estimate what force they exercise upon public opinion. What is the reason of all that? It would seem as if civilization had prepared to hand over to the women of the country the task of advancing its progress, a task from which the men had been called away to the stern duties of war. For that reason it would seem that the all-pervading Providence had made preparation for that dreadful time of stress and strain by putting women in places of leadership which the men had temporarily forsaken.

There is something to attract the imagination in the growth and power of these Institutes. The object of the Women's Institute appears to be to care for life, expressed in the broadest term. If you look at what they are doing everywhere, you will find out the main thing that they concern themselves with is life itself—trying to consider how they can make life more efficient. This dreadful war has brought untold havoc on the world, and that havoc can only be repaired, not by reference to the development of forests nor of mines or the development of the country even, but mainly and especially through the development of the human element, the development of life itself, towards which the Women's Institutes have addressed their efforts.

About seven or eight years ago, perhaps earlier than that, the Women's Institutes began a campaign for health in the schools, which has been productive of the very best results. One is inclined to wonder why public consciousness needed to be awakened to the great importance of looking after the health of the little children. The work was taken over by the Department of Education early in Dr. Cody's regime, and it was about that that I particularly wanted to speak to you. What is the work that you and I are trying to do? Where does your work touch ours in the Department of Education? I want to explain precisely the kind of work the Department of Education is trying to do in co-operation with the Women's Institutes in the Province of Ontario for the betterment of the health of the children.

The Department of Education has a staff of three doctors of long experience and high ability; they have also a staff of three nurses. Upon the request of any

Women's Institute in the Province of Ontario for Medical Inspection of the schools in their particular locality, a doctor and a nurse of the Department of Education will be sent who will complete the inspection and report to the parents and to the Department. The nurses also organize clinics, and at these clinics, the children of poor parents receive treatment free of charge. In most cases, the Women's Institutes have financed these clinics, where it is necessary. In many cases, the parents of the children contribute sums for the care given to their children, and in that way the doctor's fees and the expenses generally are paid. For the doctors and nurses that belong to the Department of Education no fee is charged, but the Women's Institutes and the Public School Inspectors in their eagerness to further this work have provided, in most cases, transportation from one part of the country to another for the doctors and nurses. In many cases, they have also entertained the doctors and nurses who are in charge of the work.

Five or six counties nearly, have been completed since the beginning of this work, about the 5th of May. I think so far as the Department of Education is concerned the first stone in this great work was turned on the 8th day of May of the present year. That day I hope will be an epoch making day in the educational history of this country.

We propose, after each county is completed, to make a survey of the reports furnished us by the doctors and the nurses. We may publish these reports, omitting names of individuals and names of localities. Some of the results are startling. I happened to glance over a report made to-day, which was summarized, of one of the most progressive counties in the Province of Ontario, and I do not know whether I ought to tell you what the appalling results of that survey were, but after all it does little good for us to keep our eyes shut. We are in the presence of great danger. Out of some 2,303 children examined, less than 100 we found to be without defects, and of that great number about 85 per cent. of the defects were removable by the simplest kind of medical operation. If they were not remedied, if they were not removed, we were condemning these children in some cases to lives of comparative uselessness; in all cases we would have been impairing their powers, retarding their progress, perhaps sowing the seeds of incurable disease. Surely with these facts before that county we should have no difficulty at all in securing proper medical supervision of the schools.

How is proper medical supervision to be brought about? I want all the persons interested in the Women's Institute movement to keep in view the statements I am going to make. It appears to me that a single nurse can very well keep in view the interests of thirty schools of the ordinary size in the country. A competent nurse can be secured for from $900 to $1,200 a year. If you divide that by thirty you will find the contribution for a Board of Trustees for the service of a medical school nurse ranges from $30 to $40 per school. Is that too much to give for the health, perhaps the life, of a single child, let alone the health of some thirty or forty children? The cost is ridiculously trifling in comparison with the great good that can be accomplished. One nurse can manage about thirty schools in the first survey, and for, maybe, some years to come. From $30 to $40 per school will pay the salary of the nurse per annum. The proposals made by the women in various parts of this Province are these: They will furnish to the nurse transportation from school to school, and lodging during the time the nurse is in their particular locality; while the Boards are making agreements to join together the schools in groups of thirty each. That would mean, roughly, that from two to three townships could be grouped together to receive the services of a nurse. In some cases, township councils have been so seized with the importance of this work that they also desire to contribute. In one or two cases we have been promised that if school nurses are appointed, the county councils will also contribute, perhaps in the way of transportation by furnishing an automobile. In this way we hope that we will be able to cover the whole Province with school nurses.

Under what circumstances can an agreement like this be made? If, say, thirty school boards unite together for the purpose of medical inspection of schools, they can make an agreement with an organization, such as the Women's Institutes or the township council or the county council or all three combined, the agreement specifying the particular part of the work each of these organizations is prepared to take in hand. That is the basis upon which we are endeavoring to secure agreements.

There is only one force that can be effective in carrying on this work, and that is the force of the local Women's Institute—the most powerful voluntary force for good there is in this Province to-day. I appeal to you as a man who feels deeply his responsibilities, to assist the Department of Education in saving the lives of the children who will soon take our places and be called upon to perform higher tasks than we have been called upon to perform, and to see that your local communities undertake this work seriously. It should not be a difficult thing for the Women's Institutes and other organizations in Ontario to see that this great work goes on, and that the children are saved. You have no nobler nor more sacred task to perform. This is the most serious business we have before us; it has practically to deal with life, the foundation of life. It is far more important than any work we do in teaching children the three R's. It is work upon which must be founded the welfare of the country and the future of its citizens. I make to you one more appeal to assist in this great work to the best of your ability, and to be assured whenever you turn to the Department your cry will be heard at the earliest possible moment and help will be sent to you in your particular locality.

DEMONSTRATION LECTURE COURSES.

Miss D. M. Sutherland, Institutes Branch, Toronto.

Perhaps, after all. no activity undertaken by the Institutes or not any service which the Department has to offer has done so much for our rural women by way of giving practical knowledge of lasting value, or bringing together all denominations and all parties in the community and developing a better understanding between them. or has so many possibilities in it as has our Demonstration Lecture Courses in Domestic Science. Home Nursing and Sewing. Already. over 15.000 girls and women throughout the Province have taken advantage of these courses. Between sixty and one hundred courses have been given each year. Even last year. with the dreadful epidemic which swept our Province. over ninety courses were given. This epidemic did more perhaps than anything else to impress upon the people the value of the Home Nursing Course. Doctors told us that wherever a Home Nursing Course had been held they received so much more valuable assistance from those who took advantage of it, which was a vital factor in saving many lives last winer. Furthermore, the women had not the same dread of coming in contact with the disease that those who had no definite knowledge had. because they knew what precautions to take to protect themselves. They knew the value of proper ventilation, of sanitation, and of nourishing food. They knew how to take the temperature, the pulse, and the respiration. They knew how to keep a chart, the symptoms of the disease, and if the frequent changes in the patient's condition were alarming or favorable. They knew how to change the sheets with patient in bed, how to make the patient comfortable, how to give a bath in bed, and how to administer medicine. Almost every woman is called upon some time in her life to minister to the sick, and as there is no time after an emergency arises to prepare for it, every woman should be forearmed with some definite knowledge. This, briefly, is the object of our course.

Our Sewing Course, too, has come into prominence within the last two or three years. With the increased cost of material and the increased cost of having things made, practically everyone is attempting to do something in her own home. Now any of the dresses of to-day can be made in our homes. There is, however, a hesitancy on the part of each one of us to undertake cutting into new material without some previous information from a fully qualified dressmaker who has had considerable experience. Following the course given, anyone who has watched closely will be able to draft patterns and make or remake her own clothes.

In addition to all this the girls receive much valuable advice from the instructor with regard to the dignity of dress—the influence it has from a moral and physical standpoint. It cannot be denied that the sheer waist with the low, loose camisole is very immodest and that the young girl who respects herself and who wishes to have the respect of the young men in her community will not combine the two. Then too, the instructor will ever keep before her classes the need for seasonable dresses and will advise the girl upon the material to get and the style by which it should be made.

I have spoken to you about our Home Nursing and Sewing Courses, but I have left the most important course until the last, the course which most vitally affects our daily life, and the lives of all those in our home. I refer to the Domestic Science Course. I say most important, because the fundamental issue in the world to-day is the right food. Right food builds and sustains right bodies; right bodies support and develop sound minds; and, sound minds breed sane thinking.

If the recent agitation on the subject of foodstuffs had not saved a single mouthful for a single soldier abroad or taught a single lesson in thrift it would still have been worth while for the sake of the children. With the study of substitutes came the study of food values and there wasn't one of us here who did not learn something. We had brought home to us the fact that improper feeding had a great deal to do with the general health of the body, and also upon the formation of the body. When our young men first volunteered for overseas' service a large number of them were rejected as physically unfit. They were at the age when health should have been in its prime. Their weakness was due primarily to wrong food. As babies and boys they had been wrongly fed and as a result had weak hearts, decayed teeth and all sorts of organic troubles which come from poor blood, lacking in the strength building properties derived from right food. Later, when the demand for men became greater and Conscription was put in force, many weaklings were taken and were made strong at the training camp tables. We learned, too, that other things being equal, the army with the best rations is bound to win out because good food gives not only strength but optimism and determination. Let me state again, that in our medical inspection survey a large percentage of our children were found suffering from malnutrition, and the doctor states that it was not because of insufficient food but food of the wrong quality for the growing child.

In 1916, statistics show us that 7,000 children in the Province of Ontario died under one year of age. I am not afraid to state that two-thirds of those deaths were due to improper feeding. There are three periods in the child's life when unwise feeding is more liable to mar the child than at any other time. The first occurs at the time of the first dentition, the second when the six-year-old molars are forming, and the third during the adolescent period. At these times there is a great drain upon the system. Nature has to take enough of the proper food to go around, and the child suffers somewhere else. For instance, you will see many a five-year-old child become run down and develop nervous habits and a tendency to faulty posture because he has not the food to form his teeth and nourish the rest of him at the same time—and adolescence is often marked by round shoulders, curvature, nervousness and unsuspected diseases. Coupled with improper food, we have in many cases improper seating in our schools. Then again, you will sometimes see strong children with poor teeth—if there is lack of nourishment Nature will take it out somewhere.

This is one of the strongest reasons why we should give careful study to the subject of foods. I am positive that a greater interest is being taken to-day than there was two years ago. I am glad to be able to tell you that we have had more applications for Domestic Science Courses this past summer and fall than we have ever had before at that season of the year.

We are all complaining about the high cost of living. Our demonstrators bear in mind, always, that the cheapest food is that which supplies the maximum of nourishment at the minimum of cost. Never cherish the thought that we attempt to teach fancy, impractical and expensive dishes. The aim is to illustrate how to serve the common foods in the most attractive and palatable and wholesome way. The farmer has for a long time been studying what foods will make the best balanced ration for his stock and what variety is necessary to keep them in the best possible condition. There must be more attention to the diet of human beings.

Full information in Demonstration Lecture Courses is contained in Circular No. 18.

We cannot emphasize too strongly the need for thoroughly advertising these courses. Very often the demonstrator reports the attendance of some members who did not know anything about the course until the end of the first week.

The attendance at the Home Nursing and First Aid Courses can be as large as the hall will accommodate, and no Branch should make application for an instructor until they can assure the Department of an attendance of at least twenty. In connection with the Sewing Course, there should be not less than twelve and not more than fifteen. Evening as well as afternoon classes can always be arranged for the Home Nursing Course when there are several girls in the town or village, who because of office duties, find it impossible to attend in the afternoon.

Dr. Skinner Gordon brought greetings from the Woman's College Hospital and Dispensary, 125 Rusholme Road, and expressed the thanks of the Board for the interest which so many of the Institutes have taken in the work during the past year.

"In answer to our appeals to you, we have had a great many generous gifts, of money, of vegetables, fruit and many other things which go towards feeding up the persons who are under our care."

We have two babies nine months old that really should have good homes furnished for them, and we have three others of younger ages. It was suggested that the Institutes establish a scholarship which would cost about $600 a year, or endow a Women's Institute bed, which would mean a sum of $2,500. These are some of the things you can do for us.

The various interests of the Navy League were presented in an instructive way by Commodore A. Jarvis, Toronto. Since the Institutes have been furnished with full information as to the aim, objects and activities of the League, it is not necessary to give particulars here.

HOMES FOR THE HOMELESS.

J. J. Kelso, Toronto, Superintendent of Neglected and Dependent Children.

You know there is a great desire for new laws, but the danger is that we are likely to neglect the old laws and the old work. Now, we have a splendid work in the Province caring for our children, and if you ladies would all help to make it effective, you would do a great deal to help the children of the Province. If you know of any neglected child or any paralyzed or forsaken or deserted child, if you do not know anyone else to write to, just write to me, and within twenty-four hours we will have the machinery at work for the protection of that child. It does not matter whether he is in Toronto or up in Parry Sound or in the most difficult place to reach of any part of Ontario. We have some forty-five inspectors who are employed to give their time to this work, and we can get in touch with them at once, and we can get any needy child cared for.

I wish the Women's Institutes would undertake to mother some of these neglected families. We had a case just recently of a woman who was feeble-minded and who had some very nice children. A little group of women connected with the local village church said, "We will take care of the family," and they go there every day or two, and they have made it possible to keep that home together and to look after that family. There is much work that can be done in that line. These are people who are not able to direct their own affairs. We do not believe in taking away children from their mother if we can avoid it.

Wherever there is a homeless child we want to get it in the hands of some good woman. It is pitiful to see the little children that are pining for lack of affection in the Institutions. They get plenty of food and all that medical skill can give them, but they are pining away for lack of affection.

There are good women all over Ontario who ought to take these children. We put an advertisement in a Farmers' paper, that a child wanted a home, and we got twenty-four applications at once, showing there is a great desire for children. If you know of any nice family who wants to get a baby, just send word about it. If you know of a family without children, ask them if they won't take a child. We have over a thousand children who ought to be out in the villages and on the farms, where they can get plenty of good milk and vegetables. Take a practical interest in this work, and if you do not know anyone else to write to, all you have to do is write to J. J. Kelso, Toronto, and I will receive it, and remember that I stand for the protection of our children.

AFTERNOON SESSION—FRIDAY, NOVEMBER 14TH, 1919.

DR. MARGARET PATTERSON, PRESIDING.

MISS HODGETTS, Margaret Eaton School, Toronto, gave an interesting talk and very entertaining demonstration of physical culture drill. She defined it as having four objects: bodily development, mental development, civic and social development, moral and character development.

MRS. ALFRED WATT, after declaring her respect and admiration for the capabilities and earnestness of Mrs. Todd, the President of the Provincial Federation, and testifying to the value of Mr. Putnam's advice and assistance in connection with the introduction and development of the Institutes in Europe, gave the following message to the delegates: Each one of you is working in the Institute; make that Institute the best thing there is in Canada. Don't get the big things before you get the little things. Try to make the Institute pleasant and bright, a big thing in the life of the community and a great big thing in your own lives. If you don't remember anything else I have said, please remember this: the whole thing that matters is that little tiny Institute in the little tiny village.

EXPERIENCES IN THE WAR ZONE.

DR. EDNA GUEST, TORONTO.

I was interested in the Women's Institutes for some years before going abroad, and it is most interesting after six years to come back and see the tremendous progress the Institutes have made. Not only the Women's Institutes but to see how our women have gone ahead. One is lost in admiration of their capabilities, not only in their homes but out of their homes. Having travelled in many nations, I have come home believing our women are the cleverest and most capable women in the world.

Many of you know I left England in 1913 to go to the medical school in Ludhiana. A great deal of their subscriptions come from Canada, apart from the Government grants from England. It is one of the places that is well worthy of your interest. When I was out there, it was the only medical school in India where women could get their medical education apart from the men, and as you know in India this is very necessary. It was after the first year's hard work in India that I had left for my holiday in Kashmir in August, 1914, when that awful news of the declaration of war was brought to us. India is very different from peaceful Canada, because out there England keeps a large English army as well as an Indian army, and in August, 1914, a large portion of this army was in Kashmir, away from the blazing heat. The order came that every man who was on leave must return by direct route to his regiment at once. There is no railway connection between Kashmir and the regimental stations. The excitement was tremendous; everything was tense, because they were not sure of India's attitude at that time. The roads were one moving, living mass of humanity, moving down towards the Plains. This can only be compared with the scenes in France as one saw the same living mass moving forward to the front lines in France. From this time onward, India was a field of very active military work indeed. The old tried troops were taken out of India and brought to France or sent to

Mesopotamia, and the raw territorials were sent out there to train for the hardships of war, and also to keep a quieting effect on the Indian mind, because that had to be kept uppermost in the minds of the British all through the early part of the war, until the Indians had proved themselves very loyal. The crack Indian regiments were taken out of India and sent to France and Mesopotamia, and very soon the wounded Indians began to return, and our hospitals out there became military hospitals. The Indians had very doleful tales to tell of modern warfare. Their idea was just one in advance of the old idea of bows and arrows. They went out with the spirit of game shooters, but they came back with broken spirits; they could not understand the modern warfare at all.

After Christmas, 1915, I left India and went to England to volunteer for service there. On my way, I was able to visit Egypt for a short time. This was just at the time we had evacuated the Dardanelles, and we heard some wonderful tales of what they tried to do in the Dardanelles.

While in Egypt, I visited a great many hospitals, and particularly was I impressed with the big Canadian General Hospital at Cairo—a wonderfully equipped place—which was later transferred to France, when they felt there was more need for hospitals there than in Cairo. A week later, I myself set sail across the infested Mediterranean. As I look back on that trip it compared more with a game of fox and goose than anything else I can think of. We were naturally the goose and the submarines were the foxes. We were at Port Said and we had to get to Marseilles, and I remember the night we set out. All things seemed to be against us. We had a full moon, and it seemed to be so peaceful. like a spirit looking down from heaven on this scene, but we seemed so out of accord with it. and one felt even the moon must be disappointed in us, as we looked—instead of heavenward to it. realizing the beauty of the whole picture—downward at the black waters, peering for something much more vital—a periscope on the waters. For the first two nights and days, after we set sail, we clung very closely to the coast, never getting out of sight of the north coast of Africa, and made our way slowly westward, everyone wondering when we were to make the awful start across. We scarcely moved for two or three days outward from the coast, and then suddenly just at nightfall, without a sound and without lights, we darted out full speed, and made our way towards Marseilles. Although the moon was full every night and the sun shone every day, and there was not a ripple on the sea—ideal weather for submarines—we arrived in safety. I felt, indeed, the British Navy was a wonderful Navy, and no honor can be too great for it.

From Marseilles, I went direct to London by way of Paris and there volunteered for service with the British War Office. I was sent to Lord Salisbury's Hospital at Dunstan. This is a large hospital of 1,000 beds, and it had 1,250 auxiliary beds where we sent our less severely wounded men, and men slightly convalescing. Our patients were Canadians, English and Australians. First, we had New Zealanders. and then they congregated them into their own hospitals. Convoys arrived from France with 150 to 200 wounded at a time, and during a rush in the summer, we received them the day after they were wounded. Convoys came over every two or three days during the summer, and these, of course, were busy days for us. The arrival of the convoys never ceased to be full of interest. We always received a telegram about eight hours before they arrived to say that day we would receive a convoy, and about four hours before it arrived, we received another telegram saying the wounded had been taken off the channel boat and boarded the train and the train had left for our hospital. When we received this word, we sent out our orders to the ambulances to prepare to meet the train and our boy scouts were called up for duty, and the sisters of the wards were told how many each of our fourteen wards would receive, and the V.A.D. and Volunteer workers were warned and prepared, and our X-ray room staff and operating room staff were prepared for any emergency cases that might be in the convoy. The volunteer workers were a very noble band of workers. When a convoy was about to arrive, a certain number of them went to the station and made tea and cocoa and had it ready for the men when they arrived. Of course, in the hurry to get the wounded from the train to the hospital, the medical side of the work would not wait for them to have this tea, so they had it ready and as each man was taken out of the train, he was given a cup of coffee or tea or cocoa, and while he was being carried from the train to the ambulances, he drank his tea and was offered cigarettes, and then was taken to the hospital.

At the hospital, he was taken directly to the ward and put in between clean sheets. This he never ceased to appreciate. Every soldier who came into the hospital appreciated it. His clothes were changed, and he was given food. Always, on arrival, they were given bread and butter and a cup of cocoa. No matter what time it was, they always got this, and then there was no waiting for their meals. After they had this, the doctors came around and dressed any wounds that it was necessary to dress, and then we left the patients to rest, but invariably the men asked for music. As soon as they got into the hospital, almost always, they asked for the gramophone or the piano, but they like the gramophone with the most jazz music you could get. Later we found they had grown so accustomed to the noise of the guns that it was painful to come into the silence of the hospital, and the jazz music made them forget France, and made them realize they were really at home in England once more.

After they had rested, the V.A.D.'s and representatives of the Red Cross came into the room and went through their possessions with them. Some of them had nothing at all—neither comb, brush nor tooth brush, and in that case they were given everything. And we added to the needs of the others. They were given fresh clean Dorothy bags, very highly colored; they did love the gaily colored Dorothy bags in which to keep their possessions. It was never considered a criminal act to pinch a gay colored Dorothy bag. In connection with our hospitals we also had a gift room, and in this we had volunteer gifts. I wished some of our Canadian women who worked so hard at home could have a glance into this gift room and at the soldiers' faces when they received what you had sent for them. After lunch, the men who were able to walk, used to go to the gift room and receive the gifts, get what they wanted—magazines, papers, etc. A Vancouver man was just as interested in a Nova Scotia paper as if he came from Nova Scotia. In this gift room they could get almost anything, and I think it was marvellous how the women supplied that place. There was nothing a Canadian soldier could not get, from a splint to an ice cream soda if an order was signed by a doctor, and we learned very soon to sign these orders for the men who came in. In the case of men who were gassed, their stomachs were upset so that nothing would stay on it for days and days. Under the strict army discipline we could not order extras for them as we could in a hospital at home, so it was only through the Red Cross and the wonderful work it did that we were able to get fresh fruit of the daintiest kind or anything necessary for a wounded soldier when he was in the hospital.

I stayed in this hospital for two years, and in September, 1917, the Scottish women asked me to take charge of the units in Corsica. It was very interesting in Corsica indeed. It is a very pretty island, and the work there was with the Serbian refugees and soldiers. We had three hospitals, the big central hospital and two smaller ones in the mountains. I used to visit the ones in the mountains once a week by motor. One was very largely maintained by Canadian money; it was a beautiful big hospital in the mountains, perhaps the finest of the three, and the Canadians had given so much money to it that at the big opening celebration, they asked me as a representative from Canada to take the great honor of raising their flags.

I was in Corsica until the following May (1918) when the Germans were making their tremendous drive towards Paris. During that time the Scottish women had another hospital at Royaumont, which was very much in the war zone. and there was a tremendous call for more doctors, so I felt it was my duty to go. I shall never forget my first sight of the front line at that hospital. I drove up to the door and met my friend Miss Ivens who was in charge. She said, "We have sixteen doctors working night and day and the wounded never seem to get any less. As I came in I found the huge front corridor absolutely strewn with wounded, lying on the floor. These were French wounded. As we went upstairs, I found the receiving rooms full up, and also the wards. One huge ward of eighty-five beds called the Canadian Ward I found was almost entirely endowed by Canadian money. There were a great many names that were familiar to me, and one of them was Dr. Helen MacMurchy, and I had the pleasure of taking care of several cases in her bed. If she knew and the other women knew how much the money did to relieve suffering, I am sure they would feel it was well worth while.

Here the work was more intense than in England. We knew nothing of work there as in France. Every night we had air raids. They began about ten o'clock each night, and every light went out. We worked by candle light if there were operations still to be performed. Every day, about every fifteen minutes, we heard the awful boom of the big Berthas. It went directly over our heads: we were in a direct line for Paris. Every morning, about an hour before dawn, the guns began, and this row went on until dawn, and then we realized our men were going over the top. About lunch time of the same day the dreadful results of the morning's work began. Our ambulances returned from the front with the wounded, and continued in a constant stream. This thing went on for months, and we felt it would never end. As we looked out of the windows, we could see a constant stream of living humanity—munition wagons, guns, soldiers, transports —all moving slowly in one direction. On the other side of the road, there was a steady stream of ambulances coming back with the wounded. Then we closed our eyes and wondered whether the world had gone mad or what was to be the outcome of it all.

None of you can realize, unless you were there, what the armistice meant to those who were in France. The world has been through the valley of the shadow, and it is our hope that we never have to be inflicted in this way again. I thank you very much.

ADDRESS.

HON. E. C. DRURY, PRIME MINISTER FOR THE PROVINCE OF ONTARIO.

I did not come here to make a speech but rather to express my good will, my personal appreciation of the great work that the Women's Institutes of Ontario are doing and the greater work I think they may do, and should do in the future. I speak with knowledge, because as you know, I come from a rural neighborhood where there is a Women's Institute; my wife is a member of the Women's Institutes, and I know of the possibilities as well as of the good work that the Institute is capable of. I think I can assure you of this: that our Government which has come into power really on the crest of a moral wave, will stand behind you for all that is best in the work that you are doing for the betterment of all conditions, particularly of child welfare, because no matter how we put it, the most important product of this country or of any country is the children of the country. I speak from experience because we are happy in having five children. And I may say quite frankly, when some people wonder who our house was built for, and whom it exists for, that it is carried on for the five children; they are the main and great object of our home, and should be of any home.

There is a great work you can do. You are entering upon a new era. That era is the time of your political emancipation, and you must see to it that a new value is given to Government in this country. In the past we have laid altogether too much stress on wealth as the object of government, and too little stress on the human element. After all, wealth exists and is of value only as it serves the human element. The most precious thing in the world is human life, and the best thing any Government can do is to make conditions such that human life can be developed along the best lines. That is the message I would give you from our Government.

You have now a great opportunity ahead of you. There never was a time when it was more important for our country that all social conditions should be as right as we can make them; there never was a time when it was more important that clean, healthy, strong children should be brought up; there never was a time when it was more important that education should be made the something that would prepare our children for citizenship, not simply something that would get them nowhere and leave no educational value. Our common schools, our public schools are made for citizenship, because 90 per cent. of our children never go any farther, and they should be better fitted for citizenship when they leave the common school. You can help in that work. I do not believe men know as much about the requirements of our primary education as women do, and you are entering on a time now when you can bring your influence to bear.

I think something should be done to have women on our local school boards in the country. Perhaps it is too early to make promises, but my views are that women should be allowed to sit on the rural school boards. I think something may be done by us to help in finding out what sort of education our rural schools and town schools are giving in the case of the 90 per cent. who go no farther. There is great work ahead of you in that. You are under the Department of Agriculture, and I think the Minister of Agriculture will say a word or two, but I will outline this, that in the future the work of the Women's Institute, so far as our Government can help, will be expedited and the work will be facilitated. If I have anything to say in the matter, you will be given the broadest platform so that the Institutes will not be confined to matters pertaining to the home and to the school and to child welfare, but also in the broadest way to prepare yourselves for the duties of citizenship that fall upon you.

I am perhaps speaking a little prematurely, but I think the fullest latitude should be given to all Women's Institutes, and if our Government does what is wrong, your Women's Institutes should be prepared to find out what is wrong and to tell us of it, and also to cultivate the spirit that will put us out of power. And I tell you this, that I have the greatest hope at the present time in the future of the Women's Institutes. It is an organization that should be developed along the broadest and freest lines. In your hands, the Women's Institutes can do the work that is needed in the citizenship of this country and in the child welfare of this country. All I can say to you as a parting word is I wish God speed to the work of the Women's Institutes.

ADDRESS.

HON. MANNING DOHERTY, MINISTER OF AGRICULTURE FOR THE PROVINCE OF ONTARIO.

When I was given the task of bringing the Premier over here, it was only with the idea of showing him where this building was, and to show him the development of the Women's Institutes in this Province, not thinking that I would be done the honor of being asked to say a few words. However, as the newly appointed head of the Department of Agriculture, I can assure you that I feel it an honor to be at the head of a Department which claims the activities of the Women's Institutes of this Province. The women in this Province and in this Dominion are exercising to-day as perhaps never before in the history of the race, a tremendous influence, an influence which will be used for the betterment of mankind. They have become a power in the political world in this Province and in this Dominion. There are those who say that to the women of this Dominion has been given the franchise as a reward for their noble efforts put forward during our days of stress and strain through which we have passed, but ladies, let me say to you as one living in the County of Peel in a rural district, and one who has watched and marvelled at the noble efforts of the women of the rural districts in those dark, black years, that it is not within the power of any man nor in the power of any Government to reward the women of this Dominion for their efforts. It shall remain for the Great Divine Judge upon that Last Day to reward them suitably.

As our Premier has stated to you, we who are entrusted with the Government of this Province are undertaking a tremendous work. We thoroughly realize that the days ahead of us are days of vast importance. We realize that there is a great work to do, but in my opinion the greatest work of reconstruction is the work which you are carrying on: the greatest task to which this Province or this Dominion can now lay its hands is the preservation of life and the bringing into life and the bringing into maturity of a good strong manhood and womanhood. So long as I have part in the direction of the affairs of the Department of Agriculture, to the Women's Institutes will be given full and complete latitude to discuss subjects as they see fit and in such manner as they may deem wise, making any criticism they think should be levelled against me or my Department, and it will not affect you nor your Institute at all. I believe in this country in the next four or five years, it is the duty of every man who occupies a position of public trust to cultivate independence of thought and spirit, and to the Women's Institutes of this Province of Ontario, I, as head of the Department of Agriculture, extend this privilege.

VENEREAL DISEASE.

Dr. Gordon Bates, representing the Canadian National Council for combating Venereal Diseases, presented a film showing the effects of this terrible disease and asked the co-operation of all in the steps being taken to combat it.

REPORT OF THE COMMITTEE ON RESOLUTIONS FOR CENTRAL ONTARIO.

1. Resolved, that adequate accommodation as near their home as possible be provided for the mentally deficient and feeble-minded children, where we find their presence in the classroom is a detriment to the whole class.

2. That the Government be requested to make adequate provision for more thorough and systematic instruction along lines of interest to the Women's Institutes, including Health, Food, Housing Problems, Girls' activities, Business Methods in the Institutes, and the lighter lines of agriculture suited to women, and would respectfully ask that favorable consideration be given to the employment of fully qualified, permanent workers.

3. Recognizing the great need for better provision for the care of the sick, the Women's Institutes respectfully request that the Government take the necessary steps to enable municipalities to establish hospitals, and that the Government bear a portion of the general expenses, with special grant for both equipment and maintenance for Northern Ontario.

4. That the Government be asked to look carefully into the matter of lodging accommodation for travellers throughout the Province, and as Institute members, we express a willingness to co-operate in providing said accommodation.

5. That we approve of the changes in the Constitution as passed at the Eastern and Western Conventions.

6. Resolved that the Women's Institutes memoralize the Government for the establishment of Juvenile and Women's Courts in each county, and that in each case a woman be required to attend such courts.

7. Resolved that the Women's Institutes memorialize the Government at the next session of the Ontario Legislature to pass a law giving to the mother equal guardianship of her children with the father.

8. We hereby wish to express our appreciation of the courtesy extended by the City of Toronto in tendering a banquet, which was so much enjoyed and appreciated by all the delegates.

To the Board of Education and Staff of the Technical School for the splendid accommodation provided and their kindly co-operation.

We also hereby express our appreciation of the services rendered by the Department of Education in furnishing school lunch, and to Mr. Leake and Miss Ewing, also to Mrs. Ballantyne for assisting in the musical programme, and to all who have helped to make this convention such a wonderful success.

9. In order to carry out the programme as outlined in the various addresses at our Federal and Provincial Women's Institute Conventions, it is necessary that the Institutes themselves lend considerable financial assistance and that the Gov-

ernment give service by furnishing qualified specialists to lead in the various Departments of work.

Be it therefore resolved that the Branch Institutes be asked to contribute a sum equal to not less than fifteen cents per member for the first year, on the understanding that a full statement be rendered to each branch from time to time throughout the year as to the activities of both the Provincial and Dominion Federations, and also upon condition that they be allowed to express their preference of the programme of activities under consideration.

At the Ottawa and London Conventions, resolutions were passed to the effect that each Branch be asked to contribute a sum equal to at least five cents per member to be utilized in financing their respective conventions and Provincial Federation.

RESOLUTIONS PASSED AT THE WESTERN CONVENTION WHICH ARE NOT INCLUDED IN RESOLUTIONS PASSED AT THE CENTRAL CONVENTION.

1. Resolved that the whole matter of summer meetings as to speakers and dates be carefully considered by the Department and the Provincial Committee, with a view to better service to the whole membership.

2. Resolved that we as women deplore the increasing prevalence of the use of cigarettes, especially among our growing boys, and that we join with our teachers in educating public opinion on these lines.

3. Resolved that we recommend our women to attend school meetings and have at least one woman, where possible, elected on the Board of Trustees, or have one woman appointed in an advisory capacity.

4. Resolved that we favor the appointment of women on the Board of Censors for moving picture films, and that we ask for a Dominion Board to standardize the pictures so presented, favoring Canadian films. And your committee urges that the Institutes interest themselves in securing slides or films of educational value, to be shown in our schools.

5. Resolved that the sympathies of the delegates be extended to Dr. Anna Backus in her sad bereavement through the death of her husband and mother.

6. Resolved that we, the Institute Branches, tender a vote of thanks to the City of London, the Women's Canadian Club, the Local Council of Women, Mr. and Mrs. Wheeler who so graciously entertained us with music, Mrs. A. Greenslade as accompanist, Mrs. A. T. Edwards, Mrs. Campbell Edwards, and Mrs. George Edwards, who has done her bit so effectively in making this convention a success.

RESOLUTIONS PASSED AT THE EASTERN CONVENTION WHICH ARE NOT MENTIONED BEFORE.

1. Resolved that we express our appreciation to the City of Ottawa for the use of the rooms in which our sessions have been held, and for the city's hospitality as expressed in the tea and the words of welcome by the Mayor on the evening of the 22nd.

To the Local Council of Women for their friendly welcome and hospitality.

To the Halcyon Club for the use of their comfortable and attractive Club Rooms.

To the Y.W.C.A. for their service in billeting.

To the Ontario Department of Education, through Mr. Leake and the Ottawa Normal School Teacher of Domestic Science, for the very interesting demonstration in connection with the Rural School Hot Lunch.

Ontario Department of Agriculture

NINETEENTH ANNUAL REPORT

OF

The Agricultural Societies

AND OF THE CONVENTION OF THE

Association of Fairs and Exhibitions

FOR THE YEAR

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1919

Printed by
THE RYERSON PRESS

To His Honour SIR JOHN STRATHEARN HENDRIE, C.V.O., a Lieutenant-Colonel in the Mititia of Canada, etc., etc., etc.

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I hereby present for the consideration of your Honour the Annual Report of the Agricultural Societies of Ontario for 1919.

Respectfully yours,

GEO. S. HENRY,

Minister of Agriculture.

TORONTO, 1919.

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ANNUAL REPORT

OF THE

Agricultural Societies of Ontario

1919

To the Honourable G. S. Henry,
Minister of Agriculture.

Sir,—The Nineteenth Annual Report of the Convention of the Ontario Association of Fairs and Exhibitions, in which appears a full statement of receipts and expenditures of the Agricultural Societies in the Province is herewith respectfully transmitted. The year just closed has been a most successful one. Live stock, poultry and other exhibits were never surpassed and the weather conditions on the whole were favorable. Many new buildings for the housing of stock were erected during the year and careful attention given to the upkeep of the grounds.

A noticeable feature in 1918 is the inclusion on the Board of Directors of a number of enthusiastic lady workers, which has created greater interest and improvement in the Women's Department of Fairs and Exhibitions. There was a marked improvement in the grain and sheaf exhibits at many of the fairs in the Province where Standing Field Crop Competitions were conducted. Judging from the enthusiasm evinced by the several hundred delegates at the Convention, 1919 will prove a banner year.

Faithfully yours,

J. Lockie Wilson,

Superintendent.

OFFICERS FOR 1919

President	L. J. C. Bull, Brampton.
First Vice-President	W. J. Connelly, Cobden.
Second Vice-President	John Farrell, Forest.
Secretary and Editor	J. Lockie Wilson, Toronto.
Treasurer	J. E. Peart, Hamilton.
Auditor	G. de W. Green, Toronto.
Representative to Canadian National Exhibition	Wm. Scarf, Toronto.
Representative to Western Fair, London	David Evans, Strathroy.

Directors.

District 1	J. E. Montgomery, S. Mountain.
" 2	J. L. F. Sproule, Westbrook.
" 3	W. J. Hill, Madoc.
" 4	Chas. Reilly, Norwood.
" 5	Jos. Wright, Beeton.
" 6	R. J. Lister, Beamsville.
" 7	Jno. McElhone, LaSalette, R.R. 2.
" 8	R. W. McKellar, Glencoe.
" 9	H. C. Riach, Wheatley.
" 10	Wm. Halliday, Chesley.
" 11	Rowland Hill, Huntsville.
" 12	E. F. Stephenson, New Liskeard. Wm. Vincer, Mindemoya. Jas. Tonkin, Fort William.

FINANCIAL STATEMENT, 1918

Receipts.

Balance on January 1st, 1918, as per audited statement of late Treasurer	$52 56
Membership fees for 1918 collected by Miss McFarlane	247 50
Membership fees for 1918 collected by present Treasurer	50 00
Cheque issued to Mrs. Hamilton uncashed	10 00
	$360 06

Expenditure.

Officers' salaries and expenses	$135 00
Assistants at Convention	17 50
Postage (Miss McFarlane)	4 50
R. Agnew, Auditor	2 50
Directors' Expenses—W. J. Barber, $10; W. J. Hamilton, $10; R. B. Henry, $10; Wm. Hickson, $10; Amos Doupe, $3.40	43 40
Printing, W. J. Fish	2 00
Premium on Bond	5 00
Receipt books	2 75
Postage	5 00
Miscellaneous	2 65
Amount not yet accounted for by Miss McFarlane	55 61
Balance in hands of present Treasurer	84 15
	$360 06

Audited and found in accordance with vouchers submitted to me.

G. de W. Green,
Auditor

February 13th, 1919.

Ontario Association of Fairs and Exhibitions

ANNUAL CONVENTION

The Nineteenth Annual Convention of the Ontario Association of Fairs and Exhibitions was held in Toronto on Thursday and Friday, February 13th and 14th, 1919.

PRESIDENT'S ADDRESS.

Wm. Scarf, Durham.

Soon after our last convention a leading agricultural journal in the Province accused us of not doing enough good work, and also stated that we were trying to profit by having school fairs, whenever it could be arranged, held conjointly with the Agricultural Society's Exhibition, but under their own management in a separate building and wholly conducted by the school children, and the school children to be allowed on the grounds free of charge if accompanied by the teachers. Generally speaking, we believe that this plan would be a benefit to all concerned, but there may be special cases where it might work better to have the School Fair held at a different time and place, but these, I think, would not be numerous. It will be readily understood that there would be great economy of both time and money in holding the joint fairs' system. Parents, of course, are anxious to compare their children's exhibits with those of others, and they also all want to attend the regular Agricultural Fall Fair. This opportunity is given, when both are held together, with great economy to all concerned. We .who have seen the joint system tried find that it works splendidly. At one show in Eastern Ontario I saw it first tried some years ago, and I assure you it was an immense success. Ten times as many saw the exhibition as would have, had there been a separate school fair. This year at the Algoma Central Exhibition the city gave the pupils garden seeds and they sowed them and entered the vegetables grown from them at the Exhibition, making one of the most attractive displays there. Surely it is worth trying. If it proves a failure, then you could go back to the separate system.

Some Provinces hold fairs only in name, but in Ontario every fair is run along agricultural lines. Games of chance and gambling devices are rarely heard of, or, if they do show up, it is only once, as the law is very strict, and they never try it again.

In the Dominion House a member for Quebec moved that no fairs be held during the war. We at once got in touch with our Executive and in a very short time we sent a representative to Ottawa showing the absurdity of the affair and we heard very little more about it. We had a great many letters from secretaries, and Members of Parliament wrote assuring us that they would see that our interests did not suffer.

I am very sorry that some arrangements could not be made this year with the railway companies for reduced rates to the Convention, but we are confident that next year, when normal conditions prevail, the usual rates will be granted.

Your committee met and arranged for a beautiful advertising poster, but orders were received for only 5,000, half of what was required to secure the contract rates.

Your committee appointed to select standard varieties of grain and roots for the crop competitions met and made certain recommendations which I hope are satisfactory.

The field crop competitions were again a great success, and the exhibits put up at the different exhibitions were very attractive.

As there were no Short Courses in 1918, it was difficult to get experienced score card men to do the judging, but we hope before another year to have that remedied.

A number of fairs suffered owing to wet weather conditions last fall.

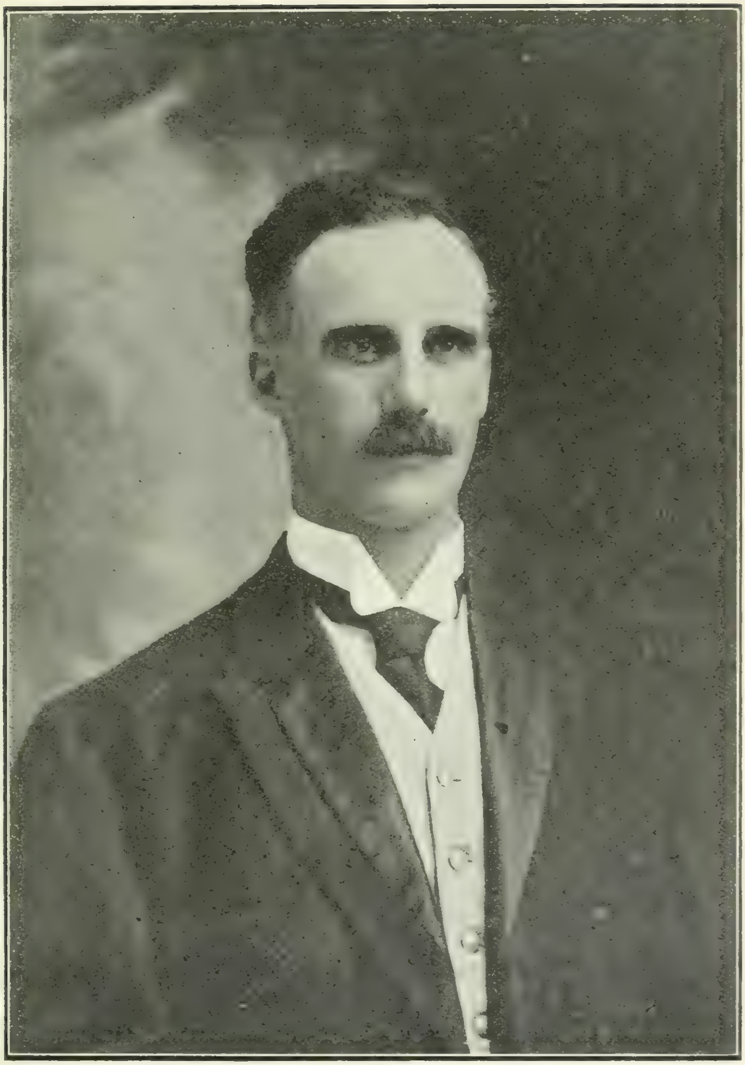
One matter of very great importance which will be dealt with, and which I consider very urgent is that some shows which receive a Government Grant make their shows local, that is confine their exhibits to those living in their Township. This is in my judgment a short-sighted policy and should not be continued. A show in an Agricultural district should be open to any one wishing to exhibit, particularly in grain, roots and all farm live stock.

Ladies' work, fine arts and domestic products are becoming more important each year at the fairs in the Province, but as there has never been a Short Course for Lady Departmental Judges, there is no uniform system of judging. Now that the ladies in the Province have received their franchise and are taking part in different lines of work hitherto conducted by men only, I am sure you will agree with me that the time is ripe for a forward movement in connection with this branch of fair work. A year ago this Convention discussed the appointment of a lady to be attached to the Department of our Superintendent to supervise those sections of the prize lists of the Societies covering ladies work, fine arts and domestic products. After considerable discussion you approved of the plan and also recommended Miss M. V. Powell, Whitby, who had been a judge of the Department for many years, as the one whom we considered most suitable for this important position. Owing, I am informed, to the fact that there was no appropriation for this work, little was done, but we trust that the matter will be taken up by the Premier, Sir. Wm. Hearst, who was at the time Minister of Agriculture, and by the Hon. G. S. Henry, at present our honored representative in the Cabinet. The time is at hand when the women of our country are coming into their own, and this move, I am sure you will agree with me, is in the right direction and will add to the already splendid record of the Government in placing the enthusiastic and earnest women of Ontario in the place that rightly belongs to them.

No doubt the delegates are all aware that a resolution was passed at the last Convention raising the affiliation fee to $2. Delegates who have not paid the fee of their Societies should get in touch with the Treasurer, Mr. Peart, at once, and pay them, as no delegates can vote unless their Societies have paid their fees.

I am sure you will all join with me in expressing our deepest sympathy with the family of our late Auditor, Mr. R. Agnew. For many years he attended our Conventions and took part in our deliberations. He was a sincere friend of the Association and his work was always well done.

As my term of office is nearing its close I thank you for your hearty co-operation in our endeavor to make the fairs and exhibitions of this banner Province of the Dominion stand at the top in all lines of endeavor that go to make the basic industry of Canada, Agriculture, one that the world might be proud of. You come here year after year filled with enthusiasm without any hope of financial reward other than the common good. Our main object was,



L. J. C. **Bull.**
President.

and will continue to be to encourage breeders of all classes of live stock and the products of field and factory to compete in friendly rivalry and continue to keep our Province as the breeding ground of the best animals and farm products that can be seen at any fair on God's green earth. I welcome you to this the Nineteenth Annual Convention of the Ontario Association of Fairs and Exhibitions.

E. F. STEPHENSON, New Liskeard: Our President has gone into matters so thoroughly that there are only a few points to which I shall refer. One is the question of the School fairs. We have not had these long enough yet to adopt any particular standard in reference to the working of them. I will tell you how we conduct them in New Liskeard. Three years ago the Women's Institute decided to have a School Children's Fair and canvassed for donations from the various merchants. I was president of the society then. I called the directors together, and said, " The Ladies are going to have a children's fair, and if they should hold it a week or ten days before we have ours it will hurt us very seriously." We called a meeting of the directors to see if we could not compromise matters with the ladies and have a union fair. The ladies were very willing, and we decided to appropriate $150 for their prize lists, and we held the fair under our own auspices with their assistance. We gave them a space of 40 x 50 feet upstairs in the building, where they had as much space as necessary for the Children's Vegetables, and everything went off splendidly. We have been following that system ever since. Of course what might work in a small village or town might not work so well in a large town or small city, and I think it will be necessary to adopt systems to suit surroundings.

Reference was made by Mr. Scarf to railroad rates, which affect us seriously. We in District 12 have a long distance to travel to come here. One gentleman here I know could not come here for less than $100. The question comes up in your local society whether that $100 would not be better spent on the prize list than sending delegates to Toronto. Of course I do not suggest that they should not come to this Convention, but what I do suggest is that some effort should be made to try and cut his railroad fare, to try and get the Railroad Companies to reduce these rates to single fares, otherwise it will interfere very largely with the attendance of those from District 12 to this Convention.

Reference was made also to some Agricultural Societies which restrict exhibitors to people residing within their own municipality. Mr. R. B. Henry is to speak on that subject later, so I shall not say anything about that at the present time. After Mr. Henry has addressed us on that subject it will be up to this Convention to decide what is best to be done about it. It will be better to make recommendations rather than to say what shall be done and what shall not be done, because there might be reasons why small societies might find it to their advantage to restrict exhibits to those residing inside their municipality.

REPORT OF SUPERINTENDENT.

J. LOCKIE WILSON, TORONTO.

I am pleased that in spite of the failure of the railroads to give us convention rates this year, you have not failed to honor us with your presence and inspiration. I am sure that before another year passes we will be able to get those convention rates that we had in the past, because after all, you are railroad builders yourselves:

you are the men who produce the stuff. Without your live stock and your cheese and your butter, grass would grow on the railroads. So they should be specially interested in the work of the Agricultural Societies of this Province, and I think they should have risen to the occasion. True, the railroad trains are pretty well filled, bringing back our soldier boys, but it would not require an extra train on any of the railways for this Convention.

I will now present my annual report for your consideration. You will be glad to know that the fairs last year, notwithstanding the strenuous conditions that prevailed, were very sucessful.

The gloom and the shadows of the war years are now behind us, thank God, and we meet here to-day with the dove of peace again within the borders of our far-flung Empire, and on the seven seas, through the tireless vigil of Britain's gallant seamen, those Germanic hyenas of ocean have been caught and are now floating harmlessly near the mist-laden shores of Scapa Flow, and the end has come to those murderous tyrants whose ambition was to control the world.

Strenuous, indeed, have been those serious years which have just closed, fraught as they were with Empires tottering in the balance and the freedom and liberty of the world at stake. From plowboy's furrow, from village counter and from blacksmith's forge, went Canada's gallant sons who heard the Motherland's cry, and over 3,000 leagues of ocean they sailed, and fought such a fight as never was fought before; wounded and dying they fell always with their faces to the foe. Let the shot-shattered fields of France and Flanders tell how fought those brave Canadian lads for Freedom's cause, and we are proud that the members of our Association have done their part nobly and well, and to those whose sons will not return, who gave their all that freedom might live, our hearts go out in deepest sympathy.

"Onward and Upward" our motto must continue to be and each must strive, you in your small corner and I in mine, to work, for the night is coming, to work, so that the world may be left better and brighter than we found it. It is not too much to say that your Association is one of the most important of the many that meet for the betterment and uplift of humanity, and those who are members of the Agricultural Societies in Ontario have, at this time of reconstruction, a wonderful opportunity for the development of all that goes to make a country great.

Fairs and Exhibitions have much to do with the increase and improvement of the all-important Live Stock Industry, and those who breed the highest types are the ones who are doing the best work for their country and for themselves. We are units in the nation's whole, and as the unit advances so advances the nation. Each should realize that life is real and life is earnest, and that not enjoyment and not sorrow is our destined end or way, but to act that each to-morrow finds us farther than to-day.

What the world requires most is efficient leadership, and that idea of qualified leadership applies with particular force at this time of reconstruction to the officers of our Central Association and our Branches throughout the Province. At your annual meetings you are called upon to elect your leaders. All personal and other considerations should be set aside and none but active, enthusiastic workers should be considered when you are making your choice. Remember the meaning of this word "Reconstruction," to "Construct again," and that is what is happening in the world to-day. These are honorable positions that you have to fill, but those who would be willing to accept for the honor alone should not be considered. With a splendid membership of 250,000 one can readily understand the necessity of outstanding leadership. Your officers in the past have done well, those you select for the future will be expected to do even better in order that the members of our Societies may reach the summit of their desire. Our field is a broad one and you men of thought and men of action must clear the way.

In the earlier stages of the history of our Societies one of the lines of work which received their attention was encouraging the better cultivation of the soil by holding plowing matches, township, county and provincial. This educational work for many years has been neglected by the Societies. It has now been taken up by an active and enthusiastic organization called the Ontario Plowmen's Association, and I would strongly recommend members of the Agricultural Societies to become interested in the branches of that Association wherever they are formed. By friendly rivalry at these plowing matches our young men are inspired to become better farmers and more satisfied with the great industry which is the foundation stone of our country.

Field Crop Competitions.

The Field Crop Competitions are becoming more popular among the farmers each succeeding year and the benefits accruing therefrom are becoming more appreciated. In 1918, notwithstanding strenuous war conditions, 7,500 farmers entered. The time has arrived when we should move forward in connection with these competitions and limit the number of varieties of grain and potatoes to such as are selected as standard ones, and each farmer be required to sow only these approved varieties. The following are the ones recommended by the committee you appointed last year to deal with this very important matter:

Fall Wheat: Dawson's Golden Chaff (white); Imperial Amber (red).

Spring Wheat: Marquis, Red Fife, Wild Goose.

Oats: O. A. C. 72; Banner.

Barley: O. A. C. 21; Mandscheuri.

Peas: Golden Vine, Canadian Beauty (White Marrowfat), Arthur.

Beans: Pea.

Corn (dent): Wisconsin No. 7; White Cap Yellow Dent, Bailey, Golden Glow.

Corn (flint): North Dakota, Longfellow, Quebec Yellow.

Potatoes: Green Mountain (Delaware): Carman No. 1, Gold Coin, Davies Warrior, Dooley, Irish Cobbler (Extra early Eureka); Early Ohio.

This committee further recommended:

"That, commencing in 1919, judges of Standing Field Crops of grain and potatoes exhibited at fairs and exhibitions be instructed to deduct from one to two points from the total scores of competitors who enter for competition varieties which are not on the list approved of at this meeting."

Would it not be advisable to apply this proposed ruling to the scoring of the grain in the fields as well?

Another recommendation of this committee was that in rule 9, governing exhibits of sheaves, grain and roots at the Provincial Winter Fairs, and the Canadian National and Central Canada Exhibitions, where the competition has hitherto been limited to the first five prize winners, there be added these words, "and any other competitors who have taken eighty-five points or over in the Standing Field Crop Competitions."

These are matters of importance which should be considered by the convention, and, if endorsed by you, will doubtless be favorably considered by the Department.

A point which should receive the attention of Societies is to select one variety of grain, potatoes or roots and sow or plant as early as possible and advise the competitors to arrange to have such sowing or planting done within the same week if conditions permit. By doing this, the crops would be practically in the same stage of ripening when the judge scored them. It will be readily seen that, when the judging is being done, if one crop is dead ripe and another in the green stage, the latter would be considerably handicapped.

Artificial treatment of grain is not looked upon with much favor by our judges at the Exhibitions, and at the Winter Fair at Ottawa three very fine samples of oats were turned down by the judge who discovered that many of the seeds were clipped so closely that the seed germ was injured. These lots of grain were evidently clipped by spading. In future, it is recommended that the clipping process should not be permitted, as this is considered artificial treatment. I would like to have your views on this matter.

Since the inauguration of Field Crop Competitions, changes have been made from time to time in the Rules and Regulations, and, as the Federal Government gave a fairly large subvention to this work in the Provinces its officers have, to a certain extent, laid down rules as to the manner in which these competitions should be conducted. For several years we have allowed competitions in turnips, mangels, sugar beets and ensilage corn. In a letter just received from the Dominion Seed Commissioner, Mr. Geo. H. Clark, a definite statement is made that no subvention will be given for field roots, garden vegetables and ensilage corn, none of which are utilized for seed purposes, unless the Ontario department assumes the financial responsibility. Therefore I will be obliged, in future, to eliminate the above named crops from our competitions. The prizes for spring wheat, which were increased in 1918, will this year be the same as for other crops. The following are those in which entry can be made: Spring and fall wheat, white oats, barley, rye, peas, flint corn, dent corn, potatoes, alsike and red clover, alfalfa and beans.

There seems to have been a misunderstanding among some of the Societies as to suggestions made at a previous Convention that the prize winners in the Field Crop Competitions should be obliged to exhibit one bushel of grain and potatoes and a sheaf at the local fair. It was left optional with the competitors in 1918. Do you not agree, in the interests of all concerned, that these exhibits at the local fairs be made compulsory, provided always that substantial prizes are offered? I would suggest that the prizes be not less than $5, $4 and $3 cash or equivalent in other prizes.

As you are doubtless aware, the main object of the Standing Field Crop Competitions is to improve the quality of seed grain in the Province and, in recent years, many so-called new varieties have been placed on the market. One particular case I might mention is that of a so-called new variety of oats named by the grower "Elmhurst." The owner of this grain had a stand at the Canadian National, and Guelph and Ottawa Winter Fairs, and has been selling his product at $5 per bushel. This grain was entered in competition at Guelph and Ottawa Winter Fairs in the general class and was only awarded third prize at each of these Exhibitions by different judges. The time, I am of opinion, has arrived when Governments should take up this matter, and before new varieties are placed on the market they should be submitted to the grain Specialists at the

Field Crop Exhibit at the C.N.E., 1918.

Central Experimental Farm, Ottawa, and the Ontario Agricultural College, Guelph, where they should be carefully tested before receiving the stamp of their approval. This is the only method by which the farmers can be protected.

At a meeting of the Grain Growers at the Guelph Winter Fair, I brought this question up and the following resolution was carried unanimously—"That no new variety of seed grain be placed on the market and sold for seed in Ontario before being listed and reported on by experts at the O. A. C. and Central Experimental Farm, Ottawa and that a copy of this resolution be sent to the Hon. T. A. Crerar and Hon. Geo. S. Henry, Ministers of Agriculture, and that they be asked to have legislation passed along the line requested."

I am pleased to note that the manufacturers of farm machinery are again making exhibits at our fairs and exhibitions and particularly fine displays of 20th Century Power Machines are seen in operation.

STANDARDIZATION.

While speaking on the standardization of farm crops, it might not be out of place to refer briefly to a proposition made by me at the Fairs Association held in Winnipeg last February *re* the standardization of farm machinery, which received the unanimous endorsation and approval of the farmers of Manitoba. My suggestion in brief was that the breakable and wearable parts of farm machinery should be standardized. The benefits accruing from standardization are apparent on every hand. Railways have standard freight cars and a standard gauge of track. Standards are fixed for plumbers' and electricians' supplies. But yesterday, a deputation waited on the Acting Premier of Canada to urge the adoption of Canadian engineering standards similar to those in operation in Great Britain and the United States. The object of this deputation was to secure an international standardization of parts which would permit an interchange which would cheapen manufacturing costs and expedite delivery. They wish to standardize parts used in bridge construction, in electrical standards, in standards for railway equipment, automobile and aeroplane parts, etc., which would facilitate and cheapen the cost of repairs. The United States is the largest farm implement manufacturing country in the world and it has at last wakened up to the fact that there are too many implements of similar design being placed upon the market and the following despatch from Washington shows the steps that are being taken along the line of standardization: "The United States Commercial Economy Board, in co-operation with the implement industry, recommended that nearly two thousand of the various styles and sizes of plows, tillage instruments, grain drills, seeders and farm elevators be eliminated from manufacture, in order to conserve materials, labor, capital and manufacturing facilities." Is Canada forever to lag behind in the onward march of progress?

We all know how standardization has helped the Allies to win the freedom of the world. All other organizations are looking after their particular industry as affected by standardization, and, indeed, to a certain extent they are seeing that standardization is being applied to the farmers' industry, for instance to wheat, potatoes, milk, cream, butter, cheese and fruit. Wheat is graded and sold according to standard and all other products of the farm in the same way. The weights and measures used by the farmer are all standardized. Therefore, I do not think it is too much to demand that the Federal Government take prompt action to have, particularly the breakable and wearable parts of all farm machinery standardized, that is, that the breakable and wearable parts of any farm implement manufactured and placed on the market in Canada should be interchangeable on a similar type of machine made by any other company. What are the benefits that would accrue from such standardization? Economy in manufacturing and convenience in purchasing repairs. Instead of half a dozen agents in a locality selling the parts of different makes of machines, one establishment would fill the bill and time would be saved by prompt delivery. Many implement firms have gone out of business in this country after selling a large number of machines. Those who purchased them, not being able to procure new castings, were obliged to scrap their machines. With standardized implements and a committee of experts from the Government and manufacturers who would utilize the best designs of machinery for a standard, such losses would not occur. Inventive genius would be encouraged and the Commission in charge would decide if future inventions were superior to those already in use. I would be glad to have an expression of opinion from the delegates at this Convention on this subject.

At the annual meetings of Agricultural Societies it was suggested that the dates for holding their Exhibitions be fixed thereat with an alternate date and that a meeting of the delegates from each District be held during the Convention of the Ontario Association of Fairs and Exhibitions in 1920 to finally arrange for the dates of the fairs in the different localities. This, I think, would be a move in the right direction and, no doubt, this suggestion will be discussed by you and given every consideration.

At the Convention held last year the proposition to have a poster that could be utilized by a large number of our Societies with a suitable cut was fully discussed, and, acting on instructions, the Committee appointed selected what they considered an attractive hanger, and letters were sent to all the Societies, asking them to inform me of the number they required, if any. In order to get the work cheaply done, it was necessary to have at least ten thousand. Applications for only five thousand were received, so the proposition had to be abandoned.

Representations have been made to the Manager and Directors of the Canadian National Exhibition *re* this Association being allowed a delegate to their Exhibition, similar to the ones allowed to other organizations, which are much smaller and less important than ours. I am of opinion that you will be given representation, and, as the annual meeting of the Canadian National will not be held for a few days, I would suggest that you elect a representative, and, if the necessary legislation is passed, you will have done your part.

I have dwelt at length from time to time on the duties of officers and directors, in so far as exhibitors are concerned. Is there not another side to this important organization? Is there not a duty that the officers and directors as well as the exhibitors owe to those who are not exhibitors but who help to swell the gate receipts and assist materially in making our exhibitions a success? I have attended fairs where the stock was being brought in at 11 o'clock and at 4 p.m. the cattle were being driven out of the gates. No time was given for visitors to examine carefully the prize winners and the main object seems to have been to secure the prize money and get home as quickly as possible.

The same state of affairs applies to a certain extent to exhibits in other departments. There should be a fixed time set for the opening of the gates and no animals or other exhibits should be allowed to be removed until that hour had come. There should in every case be a live stock parade of prize winning animals before the grandstand or some other suitable place and prize winners refusing to bring their animals out should have their prize money withheld.

Before closing, I wish to thank the officers and members for their hearty co-operation in the work we are engaged in and with united effort I am confident that 1919 will prove the best year in the history of our splendid organization.

Wm. Hickson, Bobcaygeon: This is the fourteenth time that I have attended this Convention consecutively, so you will easily see that I have seen this Association under different conditions from to-day. When we met some fourteen years ago over in Victoria Hall we were but few in numbers, but we did much good work in those old days.

Mr. Wilson's report is one of the most important we have had in the history of our Association. I have known Mr. Wilson ever since he first assumed office, and everything he has done has been done right, and the Government made no mistake when they appointed him. He started with a high ideal, and he expresses it in his report to-day—that is "Onward and Upward."

How are we to do this? It means that every Society in the Province of Ontario will have to be a progressive one with every one in it a live member, if we are going to live up to that motto. There is one thing in progressive work, you are going to run up against the interests of some few people in your community. As an instance of this, about fourteen or fifteen years ago, we adopted in our neighborhood a plan of trying to improve our stock grain. To this end we held meetings at night in the farm houses, discussing ways and means, and so on. And we did a great deal of good that way. I remember our grain dealer went with us from the town. He was very enthusiastic when we talked about the improvement of grain. Well, when the Field Crop Competitions were organized in 1907 the result was we were pretty well in line, and our competition was a pretty fair one and we were able to send seed grain to all parts—to the United States and Great Britain at $2.50 a bushel. The result was our grain dealer could not get a bushel from us. The next year I went to him and said, "You have not become a member this year." "No," he said, "I can't give you any more dollars; you have taken too many dollars from me." We had the same thing happen to us in the seed business, we got up against the seedsman. But I shall not speak about that. If your Society is not running up against something

A good type of an Ayrshire Bull.

like that you are not doing much. In the Pure Bred Stock Divisions we got up against the interests of two or three breeders.

Every progressive Society must have live progressive officers. Miss Powell, who gave us such an excellent paper here on Fine Arts and the Domestic Department of our Fairs, put an idea in my mind; in choosing your directors, if you have not any lady directors on your Board, put them on. We have had three lady directors for thirteen years, and they have the management of the Fine Arts, the Ladies' Department and Dairy and Domestic Sections, and they have always made a good success of it. However, you are liable to get poor lady directors just the same as poor men.

Now, regarding the Field Crop Competitions, our esteemed superintendent spoke at length on that point. It is one of the subjects that I studied quite extensively myself, and I say this: J. Lockie Wilson is the heart and soul of the whole movement. He is the one who first organized it, and he has kept it going since. As he told us to-day, it is becoming more popular every year, and it is one of the best agricultural movements we have.

Regarding the standardization of the grains for these Field Crop Competitions, I see a few things that may give us difficulties. For fall wheat the Committee agreed on Dawson's Golden Chaff for white, and Imperial Amber for the red wheat. Now, down in the section where I come from we raise fall wheat largely. You will find in the north-east section of the country they do not grow Dawson's Golden Chaff; you will find the Winter King. That is what we grow. We have it down there under another name, namely, "Sleep and I'll pay the Rent," because the farmers thought it was a good one. Take the northern parts of Victoria, Hastings and down to the Ottawa Valley, the Winter King is very largely grown. It is a hardier wheat, it grows heavy in the straw, it is a good milling wheat. If that Winter King is not put on for our section, we will be handicapped with that deduction of a point or two.

Of oats there are only two, the Banner and O.A.C. 72. The best all-round oat we have in Canada to-day is the Banner, and not the O.A.C. The O.A.C. may be a good oat, but it is not so good as the Banner.

Then in regard to sowing of the crops at the same dates so that when the judge comes around they may be at the same stage of maturity. Generally speaking, that should be done, because when a judge comes around and he gets a field that is very green, he does not know what to do with it, and he has got to score it hard on the supposition of what it will be when ripe, and he may score it too hard, and he may not score it hard enough, because it is not in the right condition to judge. Of course in going through the country there are high lands and low lands, and the men on low land cannot sow their grain as early as those on the high lands.

Regarding the elimination of roots and vegetables and ensilage corn: it may be all right, but I can tell you that competitions on those things have done a great deal of good, and they have produced a great tonnage per acre. That goes towards helping the live stock.

Another thing I notice in the report, and that is to compel the prize winners in the Field Crop Competition to exhibit a sheaf of grain and so on at the local fair. That is right. The home fair, your fair and my fair and all our fairs, are the fairs that are training the exhibitors for the larger fairs. If our fairs were to quit what would happen to the larger fairs? They could not exist. There is another reason—first of all, we should be loyal to our home fair. I can remember an instance a few years ago in our home fair—a man sent a sheaf and seed to the Toronto and Ottawa Exhibition and he won two prizes, but when our own fair came off he had nothing for it. He was not loyal to our own fair.

About agents running around selling seed at high rates: that should be stopped at once. We had the same thing done at our fair three years ago, where an agent sold oats and corn at high prices, and our own men had better oats and corn right among us. The seed bought from this man has now been discarded. It is just an imposition on the farmers in a great many cases.

Another thing, and I consider it is the most important point in the whole report of our superintendent, is the standardization of the wearable parts of farm machinery. I have known a farmer to break his reaper and have seen him come into our town to try and replace it. He could not do so, and had to send all the way to Toronto, and it took two days to get it down, while the wheat was dropping in the field. You can see if this standardization goes through that handicap will be taken away from the farmers.

Another point, the election of a representative to the Canadian National Exhibition here in Toronto. I think we are entitled to this—I know you all think so. It is our organizations which get the exhibits ready for Toronto, Ottawa and London.

J. H. WHEATON, Westminster: For the London Exhibition you can elect a representative, as I am a director on that Board. We have our annual meeting at the Tecumseh House on the 19th.

ARTHUR COLLINS, Cobden: I would like to throw out a suggestion in regard to the standardization of the seed to be used in the Field Crop Competition. I come from a locality that grows very good spring wheat. Any time our farmers have competed either at Ottawa or in Toronto they have almost invariably carried away the first prizes. In our locality we are large growers of White Fife and Marquis. I know at the present time our farmers are very much interested in the Field Crop Competitions, and they have their seed selected for 1919, so if White Fife seed is eliminated from the competition we will feel that we are discriminated against. If a motion would be in order I would move that this meeting recommend to the Committee that they add White Fife seed to the Marquis and the other varieties mentioned. There is another point that I want to mention. I was very much pleased that our superintendent suggested that the winners in the Field Crop Competition exhibit at our local fairs. Our Societies contribute one-third of the prize money to the Standing Field Crop Competitions, and I feel that we are entitled to the benefit of this sheaf exhibit.

W. J. CONNOLLY, Cobden: I also belong to the Cobden Society, and I want to endorse what Mr. Collins says about White Fife and Marquis. Our miller tells me for a milling wheat, it is a question whether White Fife or Marquis is the better, as he has tested it. At one time the White Fife yields best, at another the Marquis.

D. EVANS: I have great pleasure in moving the adoption of our Superintendent's report. In regard to the Field Crop Competition: I don't think there is anything of greater interest to the people in this country than pure seed. There has been objection raised here in regard to certain varieties not being included. They are discounted only by two points, and if that particular kind of grain is grown by all there there will be no discrimination against it, and no injury will be done to those individuals. In Strathroy, where I am the Secretary of the Society, they probably enter three or four kinds of grain in our Standing Field

Crop Competition for oats, but I have no objection to the standardization as recommended for the different kinds of grain under that condition. If a farmer thinks he has a chance with any other kind of oats or grain than those specified, he is handicapped only to the extent of two points. It is better to grow one kind of grain only in one locality, as buyers can then depend on getting considerable quantities there.

In regard to our live stock judges and the holding of these courses, you know just as well as I do that you can take ten or fifteen men and send them down to Ottawa or to the O.A.C. They may be the ones that are most anxious to act as our judges, but if they have not got the mental calibre at their back they are not the right men simply because they attend a school of that kind. At our last fair, while we did not send a report back that was derogatory to any of those who were sent up to officiate as our judges, yet when we had our annual meeting there was a good deal of dissatisfaction expressed. I am not voicing this sentiment because we are dissatisfied, but if there is any way in which the standard of the judges sent out can be improved the Department should adopt it. They are not the right men simply because they understand the score card. I give expression to that because I wish well to our agricultural industries in this country and to our fairs in this country. There is no object lesson that is so great to the people in this country as our fall fairs because they come in touch with the people as a whole. Only a very small percentage of our population are able to go to Toronto, London and the other centres, but to the greatest number of our people the fall fairs are doing a great deal of good.

Mr. Greenwood, Kenora: My section is a potato growing country. We grow in our locality some of the best potatoes grown in Canada. If we could only grade our potatoes they would be glad to buy them as seed for Eastern Ontario. I was sent down here to do the best I can, and I can assure you I will do it.

Regarding the exhibits, we have a rule in our Society that every cow, horse or other animal shall be on the grounds by eleven, and shall not be removed until five. We also have a rule that chickens, etc., shall not be removed until the following morning. We also have a rule, so far as vegetables are concerned, that they shall not be removed until after the show is over at ten o'clock at night, so that there is nothing removed from our place except the cattle, which I think is a very good idea, because then everybody has a chance to see things.

I second the adoption of the Superintendent's report. Carried.

Mr. Reilly, East Peterboro: I have been around with the Field Crop Judges for the last four or five years. The only fault that I have heard found with the judges for years was that they did not explain why they awarded a prize. But this last year the judge explained thoroughly and they were well satisfied, so well satisfied that it is the intention of the directors at the next directors' meeting to ask Mr. Wilson to send Mr. Hickson again to judge our field crops.

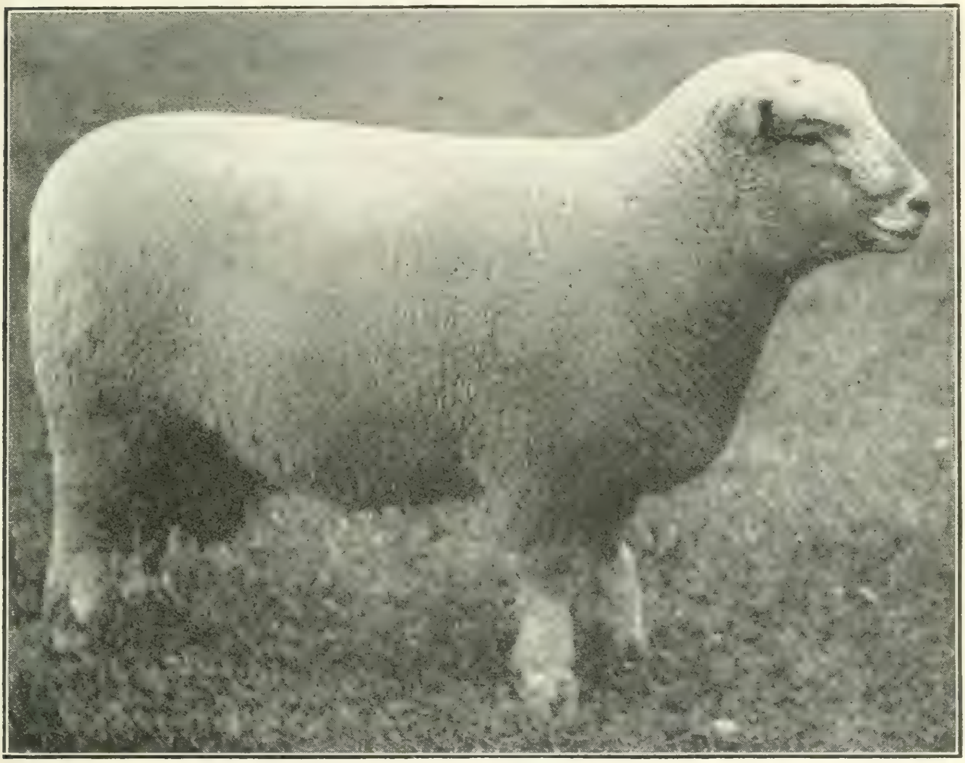
Col. Craig, Fergus: What about making it compulsory to exhibit seed at your local fair, if you are one of the Field Crop Competition prize winners? After elaborating on the importance of the showing of the grain as compared with the showing of the sheaf, he moved "That the rules of the Ontario Fairs Association be so modified that where a Society so desires and offers a fair amount of money, it be compulsory for a man who is a winner in the Field Crop Competition, to exhibit the seed."

Magnetawan Member: It gives me great pleasure to hear discussion on this question, as it was a suggestion I made some time ago. But I would like to know if there is any way we could make the men live up to that.

James A. Gray: In our particular Society we have been very much interested in the Field Crop Competition for several years. The past season for the first time we made it a rule that every one of the seven winners was to show a sheaf of wheat and a bushel of grain at our fairs, but this I may say was not carried out, except with one exception. I happened to be a second prize winner and was the only one who showed a sheaf of oats and a bushel of grain.

Mr. Gray then seconded Mr. Craig's motion.

Mr. W. H. Kell, Madoc: Madoc has been very much interested in the Field Crop Competition ever since it has been inaugurated, and I am sure that those who have made resolutions have done so in all good faith, but I know several prize winners this year who were not able to get their prize winning wheat threshed until six weeks after the fair, and I believe this move would be a detriment to the Field Crop Competition in every way.



Champion Southdown Ram. Exhibited by Colonel R. McEwen.

Geo. Benny, Emsdale: In regard to this showing of grain at the fair, speaking for our Society, we could not show any grain at the exhibition. We have our show from the 23rd to the 26th day of September and we never get our threshing done until about the first or second week in October, and if a man wants to show grain at our fair, he has to go back to the old days of the flail.

Col. Craig here explained that the member from Madoc was under a misapprehension, as his motion merely put it into the hands of each individual Society to use compulsion if they so desired.

Mr. McQuarrie, Rainy River: That resolution, as I understood it, if it was put into force would practically eliminate the exhibition of grain in our country. We hold our fairs from about the 16th to the 20th of September when we have not really finished harvesting, so that it practically eliminates the exhibit of grains at our fairs.

Mr. Haywood, Parry Sound: I would suggest that it be left to the option of the Board of Directors of each Society whether they make that rule, because some of the places around here have a very much better chance to get grain threshed than we have up north. With us it is impossible to do it.

J. Lockie Wilson: There are many difficulties in the way of exhibiting the grain. But we would suggest, even for the north country, that we make it compulsory that the prize winners should exhibit a sheaf of grain at the local fair. That will eliminate the threshing part of it.

W. J. Hill, Madoc: Is this sheaf to be for competition, or only as an exhibit at the fall fair?

J. Lockie Wilson: For competition. The understanding is that each local Society will offer prizes of not less than $5, $4 and $3, for that sheaf of grain.

Mr. Patterson, Elgin: There is a great deal of interest in the report of our Superintendent, which is the most complete that I have ever listened to at any meeting. But I cannot agree with him in his recommendation to eliminate some of the crops from the Standing Field Crop Competition, and one more particularly, because we are interested in the growing of it in our own locality, and that is ensilage corn. We grow it to a very great extent, and I would consider it would be working a hardship on the locality to eliminate a crop that has been grown so extensively the year before, and we have never missed one year with it. Last year, although we offered $100 in prizes for wheat we could not get it. So it would be an injustice to eliminate that clause. As regards showing, it should be left to every Society to regulate that, as what would suit one might not suit the others.

Mr. Anderson, South Mountain: Supposing that this resolution passes and a man takes first or second prize and does not exhibit his sheaf, will he lose the prize?

The Chairman: Certainly.

Mr. Anderson: This is a move in the right direction.

J. L. F. Sproule: The old saying has been verified here, "many men have many minds." Our Superintendent in his report made it quite clear that the object of this was the standardizing of our field crops, and if we are going to leave this thing open for the directors of the various fairs to use their judgment, I don't see how you are going to standardize anything. I don't believe in tying anyone down to hard and fast rules, but the winners in the Field Crop Competition should exhibit a sheaf, and it is also right that the directors, who are men of intelligence, should have the right to say in their own particular Society whether there shall be put into effect the rules regarding the exhibition of the threshed grain. We must remember that we are not doing this to get rid of the Association's money but to standardize the field crops of this country, so that we will not have the great number of varieties to contend with in marketing our products. I heard recently about a car of potatoes which was here in a commission merchant's hands, composed of every kind of potatoes, and he could not sell them, except at an inferior price, and that was the result of lack of standardization.

Mr. Chambers, West Lorne: I agree with Mr. Craig's motion, but it should be made compulsory to have a sheaf of grain on exhibit, no matter what it was—wheat, oats or barley. In respect to the grain it should be left to the directors who know the local conditions better than we do here. And if it is left with the directors, it would not harm any person to be guided by their judgment. I do not think any person who wins a prize has any right to get his prize money unless he conforms to this rule. If the local directors know the conditions they should make the rule, and after a man has been a prize winner at the fair, if he does not comply with those rules, he has no right to receive the money. I congratulate Mr. Wilson on his report. It was an excellent one.

In regard to standardization, it is a good idea, but we must all remember that it is going to take some time to standardize these things, and I would go even farther than Mr. Wilson did.

I would advocate the standardizing of sleighs and waggons so that the runners from a sleigh could be placed under a waggon box without any difficulty.

A. J. LITTLE, Richmond Hill: We have found the Field Crop Competitions a great benefit to our vicinity. This year we are taking up spring wheat and potatoes, and this very thing that was brought up by our Superintendent about standardization was thoroughly discussed by our directors and they came to the conclusion that they could not see why a competent judge could not judge Marquis and Goose Wheat, and so on. We have so many different kinds of soil and where one adapts itself the other will not. The same with potatoes. Of course that has been somewhat modified by the present system and we will be all right there.

As regards a sheaf of wheat: We have our fair on the 24th of May, a spring fair, and we have a fair that will compare favorably with lots of the fall fairs. How are you going to exhibit a sheaf of wheat at the spring fair?

J. F. AULT, Winchester: I have been very much interested in hearing the different views and discussions on the Field Crop Competitions. I cannot see why the question that is before us at present could not be left in the hands of the directors of each Agricultural Society. They make their rules and regulations, and if it does not suit all the localities to show a sheaf of wheat and a bushel of wheat, why not leave it with the different Societies to settle among themselves, and by doing that I think it can very well become law. When the time comes for discussion regarding the connecting up the fall fair with school fairs, I should like to say a few words in connection with that because we have carried that on very successfully for the last four years.

THE CHAIRMAN: If there is anything that you want to bring up put it in the Question Drawer, which is there for that purpose.

MR. HAYWARD: In regard to showing a sheaf, we will need a different arrangement in our district before we can comply with that rule. Last year I competed at three different fairs, and as the fair dates collided, I could not bring my live stock from one place to the other.

A MEMBER: What is the rule for exhibiting corn?

J. LOCKIE WILSON: One bushel of corn.

MR. DOUGHERTY, Cooksville: There is just one point in the Secretary's report I wish to refer to, the dropping from your Field Crop Competition of roots and fodder corn. The conditions that have existed the last two or three years and the prices we have received for our grain have probably led some of us to believe that for years to come we will be able to get those prices. We must all realize, however, that in the very near future there must necessarily be a very great drop in the price of grain. Therefore, in my opinion it would be a very serious drawback if you should remove from your Standing Field Crop Competitions roots and fodder, because the farmers of this Province will see more and more forcibly that it will be necessary for them to go into the raising of live stock. And I think it would be a very serious blow to the raising of live stock if we were not to give any encouragement to the growing of roots and fodder. I would like to move that the incoming directors be memorialized to interview the Ontario Government to see if it would not be possible for them to give a grant which would enable us to keep these in the competitions.

J. LOCKIE WILSON: I would like very much to see that left on, but the Dominion Government that passed the provision say they will not allow us anything for them, but to offer special prizes for roots and fodder corn will be all right.

BRAMPTON DELEGATE: I thought that possibly the reason why roots and fodder corn had been eliminated was that the main object of the Field Crop Competition is to encourage the producing of purer and better seed and that roots and corn are not grown here in Ontario to any extent for seed production.

I also wish to compliment our Superintendent on the work that the Fairs Association is doing and has done to standardize the judging in live stock, so as to help the judges who have been going from the Association to judge to have one standard for the different breeds of cattle, or for the different kinds of horses. Take the general purpose horse, for instance: before the judges came together at the Short Courses and compared their ideas on this, people exhibited in the general purpose class anything from a thoroughbred to a draught. Our Superintendent, by bringing the judges together, has done a good work toward standardizing, which has been the note of his address all through. One feature which he has taken up, the standardizing of the breakable parts of farm implements, I hope will soon become law.

J. J. JOHNSON, Brockville: In regard to this sheaf competition, I think it would be a good thing, but I was just wondering should it be a sheaf from the binder or a picked sheaf. If we have a sheaf shown at the fair it should be a sheaf from the binder.

J. LOCKIE WILSON: Would you take your colt to the fair in a natural state with long hair, and so on? The plan is to get the finest stalks of grain that grow in your field—show nothing but the best.

MR. MCKAY, Gravenhurst: I should like to see both the sheaf and the grain exhibited. One of the men who got prizes in wheat with us last year, as there was no threshing machine available, pounded a bushel of that wheat and brought it to Toronto Exhibition, at the request of our Superintendent, and he took first prize against all competitors. Any man who takes first prize in the Field Crop Competition should have enough loyalty and honor to supply the sheaf and if necessary the bushel of grain to both the National and his local fair.

MR. PRINCE, Manitoulin: I was very pleased to listen to the superintendent's address, and I thoroughly agree that it is advantageous that everything should be standardized. Last year when attending this convention I ordered some early seed potatoes from a man, by the name, I think, of Smith. We arranged our prize list for prizes for Green Mountain and Cobbler. When the inspector went over that seed that was planted, he pronounced it one-third only pure. I was asked by our Society to bring this matter up to see if there could not be some arrangement made whereby parties selling seed must guarantee it to be pure. I understand they paid something like $2.75 per bushel for that seed. Clover seed has to pass the test before it can be offered for sale as pure seed. Why could there not be something in the same way regarding potatoes?

Mr. HICKSON, seconded Mr. DOUGHERTY's motion, "That the incoming officers and executive of the Association memorialize the Dominion Government and ask them to provide money for prizes for turnips, mangels and corn which have been cut off the list by the Dominion Government." Carried.

Col. CRAIG's motion was then again put by him, namely, "That the present laws of this Association be so amended that it leaves it to the option of the directors of the local Society whether or not it be made compulsory to show a sheaf and bushel of grain on the part of the prize winners of the Field Crop Competition."

J. LOCKIE WILSON: Before putting that motion, let us understand this: this Convention can only recommend to the Department anything of this nature. If you are going to allow every Society to have a different regulation and a different ruling, there will be endless confusion. I do not see why there should be any objection to every Society stipulating that their prize winners exhibit at the local fair. It is very difficult to make a fixed rule. Of course, if you leave it to the directors, that might, possibly, be workable. I would like to have a uniform regulation, however.

W. J. CONNELLY: I move in amendment that it be made compulsory for this year to submit a sheaf of grain only.

The amendment was seconded by Mr. EDGE and carried.

A member stated that he had been a competitor the previous year in Dawson's Golden Chaff wheat, that he was a first prize winner, but was not apprized of the fact until he was unloading his last load of oats. He asked how he could under such circumstances select a sheaf for the fair.

THE CHAIRMAN: It is the duty of every judge before he gets on the train to leave the names of the prize winners with the Secretary. Although that is the duty of the judge, it is not the duty of the judge to give the scores. Either the judge or your Secretary did not do their duty in this case.

Mr. CLANCY said the same incident had occurred in their Society, whereupon the Chairman said Mr. Wilson should have been notified of this.

Moved by Mr. PATTERSON, and seconded by Mr. Hammond, "That this Association recommend to the Dominion Government that steps be taken to have the wearable parts of farm machinery standardized, and that a copy of this resolution be forwarded to Sir Robert Borden and Hon. Mr. Crerar, Minister of Agriculture." Carried.

NECESSITY FOR REVISION OF FINE ARTS AND DOMESTIC SCIENCE SECTIONS OF PRIZE LISTS.

MISS M. VIOLA POWELL, WHITBY.

It has been my privilege to address your Convention on two previous occasions, so that in appearing before you to-day I feel myself not altogether unknown to you, and feel you have honored me again, in giving me a place on your programme, when you have so many important topics before you for consideration.

In presenting my subject this afternoon, I would prepare your mental attitude by speaking first of Art and Science irrespective of exhibitional features, that we may approach our theme in the higher lights, so to speak.

The aim and object of modern art is nature and humanity. Great art is nothing else than the type of strong and noble life. To represent light and sunshine, storm and shadow, color or expression as it really is, and to fix it on his canvas in all its intensity, is the aim of the true student of art.

The artist must interpret or create, as well as copy. Art is great in proportion to the love of beauty shown by the painter, and consists neither in altering nor improving nature, but in seeking throughout nature for "whatsoever things are lovely, whatsoever things are pure," in displaying, to the utmost of the artist's power, the loveliness in these things and directing the thoughts of others to them.

True art is made noble and religious by the mind that produces it. For to those who feel it, nothing makes the soul so pure, so religious, as the endeavor to create something perfect.

Art is unquestionably one of the purest and highest elements in human happiness. It trains the mind through the eye, and the eye through the mind. As the sun colors flowers, so does art color life.

It is with the view of achieving the highest perfection in life and thought, that we use the best studies and models in art or science.

"What we want art to do for us, is to stay what is fleeting, to enlighten what is incomprehensible and immortalize the things that have no duration" is the way in which Ruskin describes art.

Pictures tell us of the character, aims, hopes, memories and tastes of the artist and the possessor. They open to youth the meanings and beauties of life, fixing his standard or ideal, lifting to the highest plane or dragging to the lowest level, inspiring to holiest and loftiest service, by the beauties they portray.

It is interesting to note the advance, and the various styles in which art has developed, and if time were at our disposal, the causes of development along certain lines.

The realistic school is characterized by color and the harmony of color, richness of tone, a velvety brilliancy of paints and glazes. In others, we find style and expression take precedence.

Industrial art is that which finds expression in the design of objects intended primarily for use in every household, as wall papers, cabinet and metal work and other similar styles.

When the art of painting first began, colored earths mixed with water were used, then later a proportion of glue was added to render them more permanent. This was subsequently incorporated with lime or cement and gave rise to what is familiarly known as fresco painting. These were primitive methods.

In the fifteenth century oil was adopted as a usual medium, and this led to the production of the masterpieces, which have given to the world the glimpse of what may be accomplished in the production of perfect art, inspiring the artist soul to expression, through which medium humanity is elevated.

The means whereby talent is developed and greater skill obtained, is through competition.

Exhibitions and competitions afford opportunities, to those interested in the subject, of observing the trend of modern taste, and also the encouragement given by the State. This is a point where the Ontario Fairs and Exhibitions can render real service to the student who would enrich, ennoble, and elevate his fellows by the expression of pure, high and noble thought, by encouraging the exhibitor who displays real artistic talent.

Through the medium of our fairs and exhibitions comparisons are made, defects discovered, talent developed. In this way realistic studies from nature, whether the human figure, animal life, foliage or flowers, often rise to a high level of excellence.

The talent to portray thought upon canvas, for the edification of one's fellows, is a noble study. Some trivial incident, such as a team of horses turning out of a field, a herd of sheep grazing on a hillside at sunset, an incident which, placed upon canvas, has transformed what was an ordinary enough bit of landscape, into something we recognize as a picture, and which stirs half-forgotten memories in the beholder.

The art of painting is not alone the art wrought by pencil or brush upon the canvas, but needle painting responds to all the demands of art. And one who, with silken threads of many hues, possesses the skill to create by the craft of the needle, who makes the flowers grow and bloom under her skill, who brings bird or blossom or creature into being, as in the world's famous tapestry, is, indeed, an artist worthy of the name.

One who can compete in the making of dainty scrolls, or the more domestic work of making household or personal linens, is an artist of no mean skill.

Art then, in any of its varied forms, be it with brush, pencil, needle, or the more domestic type, the culinary art, is a desirable and valuable talent to be cultivated.

Our fairs and exhibitions are the dominant medium through which we may attain degrees of perfection, providing we prepare our lists in the various departments, to induce wholesome competition and an educative, progressive style of work is demanded. Continually sifting out the undesirable and inferior subjects, will be required by the Society hoping to attract the modern advanced worker.

Every prize list should contain sections for fine and decorative or constructive arts, ladies' needlecraft and domestic science. And as a post war measure, to encourage and aid our returned, disabled soldiers, a section devoted to soldiers' vocational work would be a helpful feature.

Then these sections should conform to the types and styles of work demanded by the times, and should also be prepared with a view to developing the local amateur worker, as well as to appeal to the professional, and always with the educative value in view.

Forward, should be the slogan of every department of civil and national education. With the immigration into Canada of the peoples of other lands, we must make our fairs and exhibitions of greater educational significance than ever before. The women of other nations are coming into Canada by the thousands, to make this land their home. We are placing before them our standing as a people of culture, refinement, civilization by the crafts we display as accomplished art, and their means of learning our standards of domestic arts and crafts is mainly through such sources as the fairs and exhibitions provide.

Main Hall, Rainy River Agricultural Society.

During the past four and a half years, war work has occupied the women of Canada very largely, and the more ornamental type of work has declined very materially. We now must swing forward into the development of the finer arts, in needlecraft and home decorative arts, remembering that the women from other lands who are coming to this Canada of ours, as the wives of Canada's sons, will gather their knowledge of Canadian life and habits from just such means as the local Agricultural Fall Fair.

In order that they may learn our art of home making, and home culture, we need to give careful revision to the departments of women's work. Many of these incoming citizens excel in one department of women's work, while Canadian women have, from the pioneer days, been women who can portray on canvas the rural scene from the homestead door, interpret for us the beauties of architectural designs, and prove herself a most accomplished dietitian, or weave for us most intricate designs upon linens or other fabrics.

Some of our prize lists are devoid of any section of fine art work, others retain in their ladies' department the same subjects year after year, whether that particular style of work is being produced or not, others are revised by some of the men of the directorate, who have greater knowledge of the live stock than the women's interests.

Where is there a prize list, that does not now include pure bred stock, pedigreed animals, and all the modern agricultural methods and features? The only out-of-date, antique section of the list is the fine arts and ladies' work.

Where would the average fall fair be to-day without the domestic exhibits, and the attraction and interest derived through the women's department? If your domestic sections are a successful feature, an attractive feature, your fair is a community interest.

It is doubtful if the fall fair would be the success it is to-day without the women's sections. If the women have nothing to attract them, they will not be anxious to attend the local fair, and if the women do not enthuse the members of the household, there is not likely to be a very large attendance, and the fair is not the success it would otherwise be.

In order to hold the interest, to gain new exhibitors, if we wish to increase our entries, and if our aim is to have closer, keener competition, if we expect to draw new life and vigor, we will, of necessity, require to constantly adjust our displays to meet that end. The old time wax and wool flower wreaths have served their time, and the twentieth century calls for a higher type of beauty.

I have spoken particularly of art work, as there has been very noticeable decrease in the number of fine art exhibits during the past three years, and where there has not been the decrease in showing, the work has not been of recent execution. This department, then, requires stimulating to bring it again into its rightful place among the attractions of our exhibitions. Small loans by professional artists as an educative medium, might be stimulating and helpful to the amateur worker who has not the advantage of art schools or galleries, or studio, thus she could catch the vision of real art.

The careful study of local needs and conditions would enable the society to place upon their lists that which would appeal to their immediate district. The same style of work may not be suitable, to the same extent, in every section of the Province, hence a revision of lists in these various sections is necessary for the advance of the society's interests.

Speaking of the domestic science needs, recalls John Ruskin's interpretation of the art of Cooking, in which he says, "Cookery means carefulness and inventiveness, and willingness and readiness of appliances. It means the economy of your grandmothers and the science of the modern chemist, it means English thoroughness and French art and Arabian hospitality."

Ruskin's words come home with peculiar force to the women who are face to face with the food problems for the revolution of the eating habits of nations. The gradual, almost imperceptible changes that have taken place in dietetics since the outbreak of war, have induced us to adopt conservation habits to meet emergencies, and will be the normal procedure of to-morrow.

We should not permit ourselves to drop back to the pre-war extravagances in food preparations. It is therefore necessary to keep before the people of Ontario the thrift methods and values of foods, through the best avenue of the highest educational value. The agricultural fairs and exhibitions provide this, when the domestic science departments of the prize lists are given careful and intellectual revision, to meet the needs of the community and national life, under post-war conditions. And whatever other accomplishments the young women of Canada may possess, the art of wholesome, scientific cooking should be one of the foremost, for as Meredith poetically expresses it,

"We may live without poetry, music and art;
We may live without conscience, and live without heart;
We may live without friends, and live without books;
But civilized man cannot live without cooks."

And the wholesome competition offered by our fall fairs is of great value in stimulating the desire to know the right and the best methods of preparing the necessary foods, and also making our work pleasurable, that we may not add to the already large number of housewives who find their duties less a pleasure and more a burden.

"O, weary mothers mixing dough,
Don't you wish that food would grow?
Your lips would smile, I know, to see
A cookie bush, or a doughnut tree."

If we are going to keep pace with other societies, we need to introduce something new, modern, interesting, educative.

This we accomplish by keeping our lists revised and abreast of the times.

New features, new competitions, higher standards, unified judgment will result from careful, studied, interested preparation of our prize lists.

THE CHAIRMAN: I think you are all satisfied, after that splendid address, that we made a good selection when we recommended Miss Powell for the work she is to do for the Association.

"SHOULD AN AGRICULTURAL SOCIETY RESTRICT ITS PRIZE LIST TO EXHIBITORS FROM ITS OWN MUNICIPALITY?"

R. B. HENRY, ORANGEVILLE.

I have had a long experience in fair work, and I bring before you an important subject. I happened to mention this at a directors' meeting, and it is something I have been thinking of for some length of time. I do not wish to interfere with the rights and privileges of any Society in talking on this question. I give my own personal views and leave it with you. Should an Agricultural Society restrict its prize list to exhibitors from its own Municipality? That is the question that I have been taking up for some time. I have had experience with fairs where this is done. Personally I think that all Societies getting the Government grant and coming under the Wet Weather Insurance as well, should not restrict their fairs. They should be open. I know one or two societies—one especially where people living a mile out are restricted from exhibiting. I have known where the president and directors of that same fair had taken quite a number of prizes at neighboring shows, but would not allow others to compete at their own fair. That is not right. I would like to hear what the rest of the representatives from the different parts of Ontario have to say.

Moved by R. B. HENRY, That this Convention assembled instruct the President and Directors of this Association to send a circular letter to all Societies which restrict their prize list to their own municipality, and urge upon them the advisability of opening their fairs to the Province.

I want to thank the Superintendent, Mr. Lockie Wilson, for visiting our fair last fall and giving us an excellent address. It was one of the best fairs we had in that district, and we attributed a certain amount of that success to our Superintendent.

THE CHAIRMAN: We have contended for a number of years that any Society receiving aid from the Government should have their fairs open to the Province in Stock, Grain and Roots. We allowed them in years past to make some restrictions in ladies' work because of professionals travelling around the country and operating at the local fairs, but we would like to see every fair open to the province for agricultural products.

MR. MCMILLAN: Our Society has conducted 68 annual fall fairs and is preparing for the 69th, and competition is confined to the Township of Erin with the exception of a few classes for harness horses which are open to Toronto. We have the largest exhibits in the hall of any fair in our Township. We pay out more money in prizes than any in the county with the exception of Brampton, which is a large place. We have this large exhibit because we do not allow professionals to come in there, and our own amateurs are encouraged to make up what they can. Our directors are contemplating opening up the Live Stock classes this year, but they do not wish to be dictated to how they should conduct their fairs. We have never postponed a fair in all that time nor declared one off on account of weather, and everyone of them has been a success.

A Trio of Shorthorns not easily surpassed. **Note the well-covered tops and shoulders, and good fronts.**

W. HANNA: Our fair has been in existence over forty years and I have been Treasurer for thirty-six. We conduct a fair that is open to the whole province. We have some competitors in that fair who go to Toronto and Ottawa and take first prizes. In some cases they have taken as high as 13 prizes. Some of our competitors come from the adjoining townships and compete. We have local men who take prizes over those even who go to Toronto and Ottawa. I think our fairs should be open to all parts of the Province.

We have had some experience with professionals. A lady came to our society with a trunkload of stuff, and the first year she cleaned up the list pretty well, but next year she found that her prize list was so small that she considered it was hardly worth while, and the third year she dropped out entirely. Our local women can equal anything that can be brought in by professional prize winners.

About the Field Crop Competition: Every man competing in the Field Crop Competition is supposed to be a member of the Society. I have had two instances in the past year where those men, while they were members on retained membership, did not show at the ordinary fair for 1918. When it came to that prize list I took it upon myself to retain $1 membership from those men for the present year of 1919, and I think that if they had to exhibit a sheaf of grain for which prizes were given, they would come in as ordinary exhibitors; otherwise I feel that from every man receiving a prize $1 each year should be retained for membership fee for the coming year.

Mr. Ault: We have been conducting our fairs very successfully and have left it open to all comers. The delegate who takes exception to that said that his Society allowed harness horses to come in from outside. Where will you get more professionals than you will among exhibitors of harness horses? You are barring the ladies and are allowing the professional horseman to come in and show against the amateur. How much better would your fair be if you allowed outside competition? In going from fair to fair, in the ladies' work you will see rag carpets and stuff awarded prizes from year to year that are a disgrace to any fair, and the quicker you get outside competition, the quicker will you educate your own ladies to get up-to-date stuff and compete against the professional. I am in favor of opening the competition to every one, and it would be a slur on the ladies in our section to bar outsiders, because they are just as competent in doing high class work as any one outside.

The motion of Mr. Henry was then seconded and carried.

ADDRESS.

Dr. G. C. Creelman, O.A.C., Guelph.

Of all the Associations that it is my duty and privilege and pleasure to attend, both annual and other meetings, none of them give me more pleasure and no Association perhaps comes as close to my heart as that of the Fairs Association of the Province of Ontario. I say that advisedly and candidly because it was my duty in the early days of Ontario to act as your Superintendent. While I am sorry that some of the old secretaries have passed to their reward, I am glad to see so many young men coming to take their place, and I understand that this Association was never so strong and robust as at the present time.

I have always felt that the Fairs have come through perhaps their darkest days, when young men were leaving the farm in great numbers. Those were the dark days of the fall fair; but the days have changed, and as I visit the fairs now I begin to see the old social conditions coming back. The farmers appreciate the fact of getting together and discussing their home affairs more or less, and the ladies their social affairs, as they put on demonstrations of women's, boys' and girls' work.

We farmers learn more by demonstration than by reading. Our work keeps us pretty busy with our hands most of the year, and when we are busy for fourteen and sixteen hours a day we have little time to read. But when the farmer sees a thing he knows whether it is good or bad. And so the fairs serve to demonstrate to the farmer various phases of his business as we have them in the townships and counties of this country, and they ought to have a very great influence on the farming community.

While you may not be able to pick out anything that stands out beyond anything else in an organization of this kind, I do hope that the fairs will continue to appeal to the social life, make everybody have a good time who is there, with lots of things to see, discuss and talk over, so that everybody can go home and say, "The fair is improving, because I had a good time. I saw things I can adopt in my home life."

Your Chairman asked me to say something to you to-night in regard to European conditions, because not many of us were privileged to go over to England, Scotland and France, during war time, as they did not want us there unless we were in uniform. But, occasionally, some of us went across on a particular mission, and I had this advantage last fall in September, October and part of November, to visit the Old Country at a very auspicious time, because our boys had then gone through their darkest days. The battles of Ypres were over, Passchendaele was clear. They were fighting their way on to Armentieres, within three miles from where I was standing. The Germans were retiring fast and everybody had a feeling that it was nearly over. And so I came there on an auspicious occasion so far as the battle was concerned.

I also came there at an auspicious time, to see what the British nation had done in this war. I was there when the thing was settled down to routine. They had gone through 1915, 1916, 1917 and almost all of 1918 when I landed on the shores of Britain and found business going on as usual. The hedges were trimmed, the fields were cultivated. The older men and women were doing the work. I was surprised to see as many cattle and horses there as before the war, but not so many pigs and sheep; they could get the wool from Australia and their pork from America, and so with the statesmanship and foresight which characterizes the British administration they moved ahead and did those things which they could best do during war times, and those that were experimental they were not going to waste their time on. The result was that England, which looked as usual, was very unusual. When I registered at my hotel I was told I could not get my meal there until I got a ration book. I went down to a large place and got the required book. And I found that I could get one pound of meat a week and four ounces of butter. There was no fruit in the country, they were short of jam; no sweets, not a lump of sugar, except to the extent of ½ lb. per week, and that was not given in the hotels, you had to carry it in your own paper bag. There was lots of bread however. Englishmen did not tell about what they were doing; they just did the necessary things. The result was that every man, woman and child was getting enough to eat. They said, there is only one thing after all that is absolutely essential to life and to keep going on, and that is bread. But how are we going to get bread with wheat at $2.50 a bushel? Before they had a chance to say it, again the foresight of the British statesman came into play. They said, we will buy the wheat at the ruling price and sell it to the nation at the old price. It cost the British Government $1,000,000 a day to do that, but they said they were going to do it. Fats were short, eggs were short, meats were short, but there was lots of bread. Nobody grumbled, from the king down. They had all the bread they wanted and they were satisfied. The point I wanted to make was that Britishers seem to look one hundred years ahead. They said, let us make this country and the world safe for Christianity, and, if we can do that, what difference do any and all the things we have been used to for years make? They are only secondary. That is the position which Great Britain took and carried it on through to the end.

The next thing I noticed was that the women had organized to help in agriculture. The women began to look around for something they could do upon the land, and said, "It will not do just to go out and offer our services to the farmers without training. We had better organize. They got a Canadian girl, Mrs. Watt of British Columbia, and she told them what the Women's Institutes had done in the Province of Ontario, how they had grown and developed, what they were accomplishing, and she offered her services in helping to organize a similar institution in Great Britain. She was told they did not believe she could do anything in that way there. As they said, "We have class distinction; every town, city and hamlet has its classes and we don't believe they will mix." Mrs. Watt said, "This is the time when Great Britain is mixing and cutting aside all class distinctions, and I believe they will unite if we put it up to them in a practical way."

I was present at a Women's Institute meeting in the city of London in October last, and there were representatives of 906 Women's Institutes organized since the war came into being by Mrs. Watt and her lieutenants, and they were doing millions of dollars' worth of work organizing the women and putting them to work on the land where they could do the most good. The best women of the land came forward, fully 250,000 women came forward who had never previously done any kind of work: they hardened their muscles working on the farms, and they stayed there all the year around and relieved the men for army service. Besides that there were 10,000 women working with pick and shovel. All honor to the women in agriculture, practical women who did this sort of thing from the best walks of life!

Then the men in agriculture: I visited England and Scotland in a motor. It was before the war closed, and I was anxious to know what our people had best do in 1919 if the war had not closed. They had up to the time of the war been able to grow only enough food-stuffs in Great Britain to feed their people for ten weeks. During the war they put under cultivation 3,000,000 acres more land than they ever had under cultivation before. They plowed up their best fields. They appointed the best farmer in each district to go to other farmers and say which field to put in oats, wheat and so on, to arrive at the desired results. And the farmers did not object one bit. They plowed up their cricket fields and drives and everything else, and increased their production of food to feed their people not for ten weeks but for forty weeks. They increased the output of their farms 400 per cent. in case the submarine warfare should become so bad that they could not get their supplies from overseas. They grew as much wheat in 1918 as we grew in Canada ten or twelve years ago. They increased their potatoes 28 per cent.; their peas by 20 per cent., and their wheat up to nearly 100,000,000 of bushels. And at that time Great Britain had millions of men in France and other countries in the fighting line. Wonderful England!

They did not increase their live stock, but sold a good many of their old ones. They fattened and kept their supplies of home beef as well as they could. But they watched their young stuff, and they protected the pure-bred stock for the days that are to come. Have you ever thought how dependent we are upon Great Britain for pure-bred stock? Do you know that our Shorthorns, Herefords, Aberdeen Angus, Galloways, Jerseys and Ayrshires, Clydesdales, Shires, Hackneys and thoroughbreds come from there? The Minister of Agriculture for Alberta last fall had the privilege of going through the central and middle States, starting at Chicago. He came back to the city of London over Sunday, and said that he saw more good horses on Saturday and Sunday in the city of London than he had in those three weeks through the splendid corn belt of the United States.

Stop and think how agriculture would have fared in this country if in Great Britain they had allowed all those things to go to the block instead of thinking ahead. They conserved their pure-bred stock, and yet they fed their and our soldiers at the front, and no one went without food and good food at that. And I want to impress upon you what was impressed upon me—what we owe to Great Britain in the way of live stock in this country of Canada. That leads me to say that after I visited France I saw they were pretty well supplied with horses and cattle there. They had been long-headed in that too. They have been breeding these animals for hundreds of years and they do not want them to die out.

Hereford Heifer.

After I saw the sugar beet fields in France destroyed, and 80 per cent. of their factories, I began to think of the part that the different countries had played in winning the war. There were times when the Canadians did excellent work, and also when the Australians won the day. The Americans when they came in this summer saved the situation, not so much in numbers as in the moral effect upon the different armies. They all had their turn. Scotland splendidly, all but bled white; British to the last man; Ireland some. When I asked them in England who were the best fighters, I never heard them mention England at all. They mentioned various Scottish and Irish regiments. You would think England was not in the war, you heard so little about her. And yet 80 per cent. of all the people that went from the British Isles went from England alone.

And in spite of all this, Great Britain, with England to the fore, raised 38 billions of dollars, without an appeal going up and down the country to invest your money at 5½ per cent. England simply said we will need more money to carry on the war, and the people who have money will lend it to the British Government. And then she was enabled to take 7 billion of that and lend it to other nations.

While Britain had millions of men in France, at the same time she had an army in Egypt, another in Palestine, and in Mesopotamia and in Salonika, one in Italy and one in Belgium—seven standing armies, and financing them all. That is what won the war—the pertinacity of those men in putting up everything they had in order that we might have a permanent peace. And their men only got, first a shilling a day, and afterwards a shilling and sixpence. This reminds me of a story: A little Cockney Englishman captured a big German, and in bringing him back of the lines, the German said, "You are fighting for money" (and this chap was getting only 36 cents a day), and then went on to say, "And we are fighting for honor." The little Cockney said, "I guess that is so, we are both fighting for what we haven't got."

The first few months of the war England with her "contemptible" little army, raised 530,000 men, that is to say, she raised 80 per cent. of her entire army, as it was when she started. But the recruits came on so well that soon the little army became a big one. In the Somme offensive alone (the River is not much bigger than the Don, just a big long swamp, but a hard place to fight) the British lost 25,000 officers and 500,000 men, and there was not much said. She stopped the rush when Germany had prepared for forty years, and was up there with her big guns; and yet the "contemptible" little army of Great Britain stopped them there. They could not have done that if it had not been that, when things got pretty bad and we were pretty badly placed, Lloyd George came forward and he said in no uncertain way, "We have got to have more men. We know the German strength, we know their ammunition, we know their preparations. We know it all. But knowing it does not help us, and we want more men. There is only one way of getting them in Great Britain. We are using men here in places, men who could be well spared for the front, if we could get someone to take their places. I make an appeal to the women of Great Britain to go on the land, into the munition factories, and to go wherever they can—on the buses, in the street cars." 5,000,000 women placed themselves at the disposal of the country, and relieved 5,000,000 men to go forward and help win the war. A splendid tribute to the women of England, women whom we considered indolent. These women gave up everything and they went into the munition factories and produced munitions, until from 50 rounds of shell a day at the beginning, we had at the close of the war ten to one of the Germans. Eighty per cent. of all the shells in England were made by women. When the time came we had thousands of shells and have yet, piled up on the shores of France, and thousands more as I saw them camouflaged with sod huts. Britain put patriotism before profits. They have done well in agriculture. They have done well in winning the war. If I had time, I should like to tell you something about the navy. You have heard lots of that.

I should, however, like to tell you something about Britain's merchant service. It has never been recorded that a single man in that British merchant service said, "I will not go." On the night war broke out it was my pleasure to leave Victoria to go to Australia and New Zealand. Within twelve hours our lights were put out, we had cables on that boat telling us about the war, telling us what direction to sail and telling us to go into the port of Honolulu the opposite way to which the steamer generally went. Within twelve hours the British navy took charge of every Britisher on the sea all over the world. On my trip to England, every morning we got up, there they were, there were the *Empress of Britain,* the *Adriatic* and another White Star liner sailing along like a flock of ducks, right in the time of the greatest activity of the submarines, so that we might safely cross the Atlantic Ocean under terms that had never been thought of before.

Great Britain has not forgotten her agriculture; Great Britain has not forgotten that the other parts of the Empire will want her live stock, and in spite of the fact that she increased her food production by 400 per cent. she has found time to win the war, bringing it to a safe conclusion and making this country a safe place for you and for me to live in.

SHOULD FEDERAL AND PROVINCIAL GRANTS TO AGRICULTURAL SOCIETIES BE INCREASED?

A. R. G. Smith, New Hamburg.

This, our first annual meeting since the great world war ceased, has brought us face to face with certain conditions that call for action.

During the progress of the war we hesitated to ask for anything we could do without in the form of increased Government assistance, though many times we felt we were handicapped by lack of funds.

The results of the war have seriously interfered with progressive Agricultural Fall and Spring Fair work. Newsprint has advanced seriously, labor is higher, paint and lumber are almost prohibitive, while our sources of income have been seriously affected by large demands made on the public's purse for patriotic work. We have to contend with the unwritten law of a fixed price for admission at our fairs.

Fair Boards have my sympathy, for I am well aware that the 4,000 men who comprise our Fair Boards realize their possibilities and responsibilities.

We agree with the statement made by one of Canada's foremost authorities that the large war debt that has accumulated will be mostly paid by the top six inches of soil of our land. No system of securing a continuous return from the soil is better than to market the crops of the top six inches of soil, through the medium of live stock, with the by-products returned to the land.

We have been advising this method for years, and the outstanding farms of this Province are those that have carried that out, and have fed large quantities of concentrated foods beside what they grew on their own land.

I have here a pamphlet forwarded by the Canada Food Board called "Canada's Opportunity." The last sentence of its preface is significant, "Increased production of live stock is of vital importance to Canada and her future, and is the most valuable reconstruction work that can be done."

This pamphlet shows Canada to be far down the scale as a producer of all kinds of live stock, compared with Holland, Denmark, Germany, Great Britain, France, Italy, Australia and the United States, and I notice in the annual address of the President of the Canadian Bank of Commerce, reference is made to this condition.

Our Department of Agriculture has been quite alive to the importance of the live stock situation, and has been very active in holding live stock judging courses for our young men all over the Province.

The District Representatives, and there is no class of young men more carefully selected, nor more appreciated by rural Ontario, have done their best to interest us in good live stock, and I would like to see the financial situations of our Agricultural Societies so improved that we could do what we would like to in offering more and larger prizes for good live stock, at our Annual Fall Fairs. Large prizes and more of them are the best stimulus that I know of.

I have great respect for the work of large fairs, but I believe the work of the smaller township fairs is really more important than that of the large ones, as it develops in every community a live interest in agricultural matters. We should have good live stock in every community where the smaller breeder who cannot stand up against the large and wealthier exhibitor will have a chance to do good work and exhibit his animals.

First Prize Lincoln Ewe Lamb at Guelph Winter Fair.
Bred By D. A. Campbell, Appin.

I believe that the Department of Agriculture will not turn a deaf ear to our appeal. I believe that our present Minister, Hon. Geo. S. Henry, will be only too glad to render us assistance. We were pleased to have him as our guest last fall, and I know he is heartily in sympathy with the work of the Agricultural Societies.

Our own Society has made some progress, and we hope we have done some good work. Fortunately for us we have a very active body of twelve directors who cannot be duplicated in this Province. I am not one, I am the 13th. As a result of their work we have been fortunate in getting financial assistance outside the Government grants. Three gentlemen have given us $740 during the past few years. This has put us on our feet and we happen to be one of the Societies which have received increased grants every year.

We live in a progressive community, and I might mention one example. We have a co-operative cheese and butter manufacturing company. Our financial statement of 1917 shows a production of $17,000. Last year within a radius of five miles we produced and marketed $103,200 worth of butter and cheese.

There are many other features of our Fall Shows that need financial stimulation. Rural Ontario is deserving of consideration. We may not take a large part in a public way, but beneath our breasts our hearts beat true. When we heard our country's call for more foodstuffs, there was a noble response. The farmer, his wife, his sons, and daughters rose early in the morning and labored far into the night to do their bit to see that the civilian population of Britain and our gallant fellows at the front did not want for anything either in comforts or foodstuffs.

The Agricultural Societies have a great field for work that cannot be performed successfully unless we get more Government support.

Rural boys and girls should have opportunity to show more of their handwork. We set aside over $200 last year for the competitions for our twenty township schools.

The Superintendent's report shows that a great deal was done last year as a result of the recommendation of our Premier in regard to the spring wheat competitions.

I have noticed that our Agricultural Societies other than the stock ones, in 1916 received: $73,043; 1917, $72,190; in 1918, $72,131, each year a decrease.

Might I also recommend that this year the Agricultural Societies of every county, with information and arguments that could be furnished by the officers of the Fairs Association, send deputations to our county councils, asking for larger grants. I secured from the Superintendent the information as to the county grants to Agricultural Societies and much more would be granted, I am sure, if they had the information regarding our objects. Waterloo County has always responded and last year the Finance Committee recommended the doubling of our grants.

I am sure Rural Ontario would appreciate more Government support for the organizations that have increased interest in field crops and wish now to be of greater service than ever before.

ADDRESS.

HON. G. H. FERGUSON, MINISTER OF LANDS, FORESTS AND MINES, TORONTO.

I must apologize for the absence of the Minister of Agriculture who has asked me to come here and express his regrets.

I feel at home because about ten years ago I used to attend here as a delegate from the eastern part of the Province. I was very much impressed with what Mr. Smith said about the importance of smaller Agricultural Societies, because after all that is the basic unit that prepares the ground for the exhibits at the larger national and provincial Associations.

There can be no gainsaying the fact that while agriculture is recognized as the essential basic industry the world over, it is particularly so in this Province of Ontario, and we may talk about our immense industrial development, the tremendous mineral and forest resources we have, and the abundance of natural wealth, but Ontario is and always will be essentially an agricultural province, so that it is extremely important that emphasis should be laid upon that phase of our provincial life.

Agriculture, like every other walk of life, responds to larger profits, greater comfort, and all that kind of thing. And at this particular time in the history of our province we have the greatest opportunity in that respect we have ever had. We have had great impetus during the past four years. We have raised our field crops from a value of $188,000,000 in 1913, to $375,000,000 in 1918, almost double in amount. We increased our acreage by 500,000 in four years. We have at present 10,000,000 acres under cultivation in Old Ontario. This just shows you what the opportunities are for agriculture in this province.

Supply and demand is at the base of success of every branch of life. We are on the eve of the greatest possible demand and opportunity for agriculture that we have ever known. While during the war there has been a tremendous drain on our strength, resulting in an increased demand for agricultural products the world over, while we have discovered new markets, many of those markets are going to remain permanently with us, because, although during years our statesmen and our public administrators have endeavored to find new avenues of trade for this country, the combined efforts of them all have not done a tithe towards giving us such improved advantages as the splendid lads we sent overseas have done for us. Their splendid record has focused the eyes of the world upon Canada, not only as a producer of food stuffs and other industrial products, but as a producer of men. They have set a record that the world will emulate, and in the years to come and in the immediate future, there can be no possible doubt that we will find coming from other shores immense numbers of immigrants that will assist us in developing the tremendous resources of the Province of Ontario.

Now if our market opportunities should increase we should certainly be equal to the occasion. We must rise to the occasion and see that we have increased production, not only by increased muscular effort, but also by the application of more intelligence to our farming methods. We must produce a greater amount of food products, of agricultural products, that will give us a greater return in money for our labor. That is to be done in two ways. One particularly is by the application of greater intelligence and scientific methods to our agricultural work, and I think we will all agree that there is no vocation, there is no branch of industry that gives such an abundant return or responds so readily to the application of a little science, as does agriculture. I am not a scientific agriculturist, perhaps, but I am an agriculturist in a small way, and it is marvellous what one can do if you take the advice of men who are schooled and trained in scientific work. I have a little patch of ground, 30 acres in extent. I do not do the farming myself. I have a man on it. Part of it is an orchard. We manage on that little 30 acres to get a return of $3.500 a year. We do it with 8 acres of orchard, which gives us from $1,000 to $1.100 a year. We plan every year to handle 100 hogs, and we do it. We do not raise all the feed, of course. We handle from eight to ten head of cattle. When hogs go down a cent or two, all my farmer does is to look up his book and find out what it is costing him to keep them, because, while we cannot fix the market price for a product we can always reduce the price of production by using a little sense and intelligence, and in that way I have had it demonstrated to myself by a few little simple rules, what a tremendous impetus you can give agricultural production on your own place.

Now the Government recognizes that and it is devoting a great deal of time and attention to improving agricultural training, realizing that farmers not being centralized as they are in the urban centres, they cannot be brought into educational institutions, so that the agricultural training must be taken to the farmers' doors, and that we have attempted to do, and, I was glad to hear Mr. Smith say, with a good deal of success, through the District Representatives that are in almost every county to-day. We have gone further than that in connection with our schools. While, perhaps, the agricultural training in the High Schools has not been all that it should be, we have down east established an agricultural school out in the country where the atmosphere will be agricultural, where the everyday problems will be solved for the farmers without cost. A small farm is there, a limited amount of stock is kept, a staff of trained agriculturists will be there at all times, and we are endeavoring to elevate the industry, the work of the farmer, and bring home to and demonstrate to him what methods he should adopt if he wishes to improve his condition and increase his bank account.

Six months old Yorkshire Sows.
Bred by J. E. Brethour and Nephew, Burford.

Another thing that contributes most, perhaps, to the success of agriculture, and to the success and comfort of living on the farm, and that is the method of transportation, because no matter how successful you may be in your production, unless you can get it to a successful market quickly and at a small cost, there is very little use in attempting a crop. You cannot compete with others. We have railway transportation and we have water transportation; we have perhaps the best railway system in the Province of Ontario that exists in this country; we have something like 18,000 miles of railroad. But we must in addition to that, have the important link that is wanting to-day in the rural sections of the province, and that is good roads. That will enable the farmer in less time to reach his market, enable him to keep his family together and thereby improve his financial condition and the comforts that he enjoys at home.

Those are the lines the Government is following in attempting to assist and improve the agricultural situation in the Province of Ontario.

If my good friend, Mr. Henry, was here, he would have elaborated upon these things at greater length. I am very glad indeed to be here, and know that there is such a keen interest taken in the agricultural fairs of the province, because I am sure no one appreciates more than the Government the amount of work you have on hand in this connection. There is no form of education like demonstration in the development of any work, and that you get through your educational fair the vizualization of an idea.

I agree with Mr. Smith in the view that he expressed regarding live stock. While I am not Minister of Agriculture I have had a good deal to do with agriculture in one part of the Province.

Up in Northern Ontario we have even a greater province than we have here. We have a more extensive country. If you will look at the map you will find that only about one-third of the Province of Ontario is occupied to-day. We have fertility of soil, excellent water, luxuriant verdure, almost in unlimited abundance, and I feel that if we are to get along agriculturally, we should emphasize the importance of the live stock industry.

Many farmers up there began simply with their axe; the New Liskeard district eighteen years ago was solid bush. To-day they have developed farms worth from $5,000 to $10,000. In that district the live stock industry has not been developed to any great extent. Under legislation dealing with that part of Ontario the Minister has been given wide powers in the development of agriculture there. Knowing something of the dairy industry, I sent one of our representatives through the district endeavoring to encourage the establishment of a creamery of some kind, because I felt sure, that if we had the creamery, if the farmer was getting his cash regularly instead of peddling his product around the stores and getting due bills, he would readily see the advantage and the profit from it. As a result of our efforts the farmers agreed if I would build the creamery and demonstrate that it was a success, they would take it off my hands. So I built with public money a creamery at New Liskeard. We started with 53 patrons, sending us the milk from 153 cows. We closed this year, at the end of the year with 327 patrons, sending us milk from over 1,000 cows to that creamery. That shows how quickly agriculture and the agriculturist will respond to some encouragement and he only needs to be encouraged along the right lines. We paid to the farmers of New Liskeard $38,000 in cash for their product every two weeks.

Now my own view is that Northern Ontario is going to be a wonderful stock country—water in quantities of the purest kind, luxuriant growth of all kinds, plenty of protection against storms and cold, and every condition favorable to the success of agriculture along stock-raising lines. I often wish that we had the opportunity of taking the farmers of Southern Ontario up into that great clay belt.

I said that we had 10,000,000 acres under cultivation in the older portions of Ontario. We have 20,000,000 acres of land up in New Ontario, in which there has never been a plow. So it gives one an idea of the vast extent of this province of which we are so proud.

FINANCIAL STATEMENT.

The Treasurer then presented his report, which will be found on page 6.

It was moved by Mr. TONKIN, seconded by Mr. MONTGOMERY, that the Treasurer's report be adopted. Carried.

Before calling for nomination of officers for the ensuing year, the President, Mr. Scarf, addressed the convention as follows:

I thank you very kindly for the honor I have received at your hands. I have occupied the chair during the last two years, and I have received every support from you, in such a way as I shall never forget.

I believe our organization is the largest of its kind in the world. I well remember, as I look over the ground over which we have travelled, some of the difficulties we had in the years past as to the appointment of directors. We then adopted a scheme which was to divide the Province into districts, and every district to have a director. We left the matter to Mr. Wilson, and he framed the districts as you now have them. They have been very satisfactory. I had the very great honor at that time to be elected to represent the largest district in the Province, being the first representative of District 10. I served my term in that district for one year, and at the end of that time I could have had the unanimous election again by the people of that district for a second term. But I said I thought these things should go around, and I think so yet. We arranged at that time that one county should have it one year and another the next. We have followed that out, and not a man has asked for a second term of directorship. The first President of the Fairs Association came from our district. Then again we had Mr. Crow a few years ago, and two years ago I was elected President.

We have also another unwritten law in this Association that we should have one of the Vice-Presidents from the east and another from the west. Another thing we have had since we have commenced here is that the first Vice-President has followed the President to the Chair. Everybody has been in harmony as to that.

There is another thing I should like to see done. A very great part of the Province of Ontario is in the northern district. We have never in all those years had a President from up there.

It was said to me two or three years ago that I never went after anything that I did not get it so far as the Fairs Association was concerned. Anything that I ever went after was for the good of the Fairs Association. I will never forget the fight we put up for this insurance scheme. We had to work three or four years until we got it working. I remember the vote that was against putting that $10,000 aside, and at a meeting which I attended a man got up and said, "We never lost a dollar by wet weather." Now it was not very long before that same Society came after some of that insurance. We carried that measure through, and what was the consequence: The Government every year votes that $10,000 to be put aside for our protection in that way—to be spent if necessary.

There is another matter which I will deal with very briefly, and I am going to try and fight for this matter—there are some Societies in this Province that take that Government grant, and they say that people shall not, if they do not live in this township, show at this fair. I am going to move that we appoint a committee to go before the Minister of Agriculture, to see if they will not withhold the grant from any Society that does not make its fair open to the Province in stock, grain, roots or fruit.

Another thing that I want to see done. That resolution that we passed last night was not quite as strong as some would have wanted it, but we put the thin edge of the wedge in. As I went through the door last night, a delegate said that a certain township has a Society in this Province that will not allow the next township to show, but the President of that Society will load up a load of grain, and a drove of cattle, horses and sheep, and he will go to three fairs outside of that county. Is that right?

There are 360 Societies in this Province, and every one of them should pay their affiliation fee to this Association, and we must try and see if we cannot bring them in, because every Society has received the benefits that we have worked for.

I have never since I was President of this Society, given the Superintendent any praise. I have known Mr. Wilson since he has occupied the position that he does, and I have found him to be straightforward in every way. Every man that asks him a question gets an answer, and to the point, and if the Minister of Agriculture was to search the Province of Ontario I do not believe they could get a man better than Mr. Wilson.

W. J. CONNOLLY: One of the greatest honors that ever came to our boys in France is to write home or come home and say that they have gone "over the top." Mr. Scarf has done that in the affairs of the Fairs Association, and never has there been a President in this Association that has done more for this Association than Mr. Scarf.

The election of officers resulted as on page 6.

QUESTION BOX.

Q.—Have any Societies got plans on hand of a suitable Agricultural Hall for a small fair in rural Ontario?

J. LOCKIE WILSON: I do not know of any. They all build to suit their own convenience and conditions.

MR. W. A. MCKENZIE, Mitchell: In Mitchell there was a building erected two years ago .70 feet in diameter.

J. LOCKIE WILSON: It is a very good hall, octagonal in shape.

Q.—Should seed potatoes in carload lots be graded the same as clover and other seeds?

Moved by Mr. GREENWOOD, seconded by Mr. J. EDMOND, "That we ask the Dominion Government to have potatoes graded (in car lots or otherwise) for seed purposes on the same basis as seeds and other fruits." Carried.

Q.—Should the Provincial Government give grants to schools fairs?

To get the concensus of opinion on this a vote was asked for, and the meeting was unanimously in favor.

Q.—What would be the penalty if a prize winner did not live up to the rules of showing a sheaf?

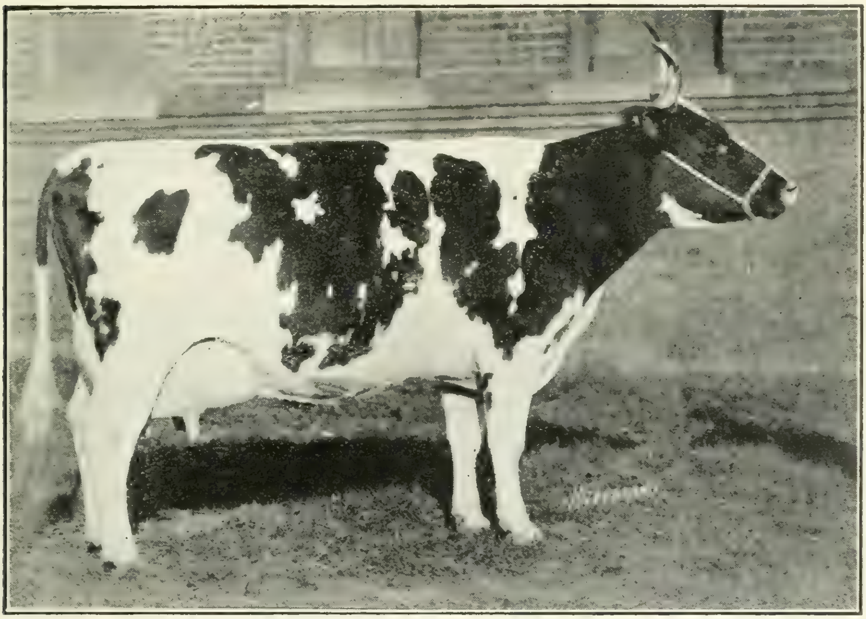
J. LOCKIE WILSON: Yesterday you voted almost unanimously that in a Society which held a Field Crop Competition, the seven prize winners would be obliged to exhibit a sheaf at your fall fairs. That meets with your views and it certainly meets with mine, and I will make the recommendation that the seven prize winners be compelled to show a sheaf at their fall fair, provided the Society offers prizes of $5, $4 and $3.

Q.—Has an agricultural society any authority to make any reasonable modification of the Departmental rules governing Field Crop Competitions?

J. LOCKIE WILSON: The rules and regulations are laid down by the Department. If every Society modified them as they saw fit there would be no uniformity.

Q.—How does this Convention stand with regard to holding School Fairs and Agricultural Fairs conjointly?

NELSON HALL: I put that question in last night. Last year we got a grant from the Council. Half of the school sections held their fairs in conjunction with our Township Fair. The rest of the children in the adjoining township to us have it on the same day, and they are making a success of it. I have been a trustee for twenty years and I take an interest in the school fair as well as in the agricultural fair. We let the children come in free, they show their calves, chickens and so on, and then, if they are a member, or their parents members, they can show in the children's first and then take their exhibit over and show it at the Society's fair. If we leave the children out, we lose a link. The agricultural fairs are for the rising generation and I would like to see them come and hold the fairs together. The township adjoining us holds it in connection with their fall fair.



Sweepstakes Ayrshire, property of R. R. Ness & Sons.

J. LOCKIE WILSON: I am surprised to hear that an officer of the Department would oppose the unanimous wishes of the parents of the children, the directors and trustees of the school sections who were desirous of holding the school fair at the same time as the fall fair, provided that the children are allowed in free of charge and have full control of their own exhibits in a separate tent or building as is generally done, with, of course, a separate prize list. In my judgment this matter might be left to be decided by those who are directly locally concerned. There would be great economy of time at the busiest season of the year for the farmer and in many cases the same judges could do the work of both organizations. This would prove of economic value from a monetary standpoint. I know, however, that there are many cases where it would be better to hold the fairs separately, particularly where schools were located a long distance from the headquarters of the Agricultural Society.

MR. FLETT, Essex: I waited on our District Representative last fall and asked to have our Township and School Fair held in conjunction with each other, and he said the Department would not allow it.

MR. MCELHONE: We hold our fairs on the same day and if they were held on separate days they would not be as great a success, owing to the lost time.

MR. CULVER: In Norfolk we have held them on the same day for five years and they proved a success. With the present shortage of help, the extra day's time means considerable. You cut the interest out of either the one or the other. Now, after the school fair was held in conjunction with the Society's fair, we received visitors at our fair who never attended before. It does not cost the Society anything to hold them together, because the entries are all made through the teachers and the District Representative. It might be a good plan to send a motion in from this gathering to the Department, asking that the Department allow the school fair to be held in conjunction with the agricultural fair if the Society, the school trustees and the District Representative agree upon it.

A DELEGATE: At St. Mary's we have held our school fair with our township fair. Last year we had six schools with us. We gave them the space and the prize money. We allow the school children in free. Both the teachers and parents are very much in favor of it because it does the whole thing in one day and saves a lot of time and money.

W. HANNA, Port Carling: Last year was the first in which we had a school fair. Our head teacher is a young lady who has taken a course at Guelph, and she is very active in those matters. She decided that our school should have a fair. She came to the Society, and requested the Society to make some arrangements with regard to it. Our directors thought it was imposing rather too much work upon them. Unfortunately, some of our directors, especially in the country places, are concerned too much in the exhibits of their own to give proper attention to the affairs of the Society, which should interest them as directors. There are other places, perhaps, lacking as well as our own in this respect. However, our directors suggested that the school trustees along with the teacher should organize and take charge of the school exhibit. Our hall is divided into two rooms, and we gave them the back room, with an outside entrance and also an entrance from the main room. The children, as well as the teachers, were very much interested. They put up a fine show, decorated that room with natural leaves and grasses and green, and it was a picture in itself. They charged a 10 cent fee to the outside public; all the children went in free. The Society made a small grant for the prizes and the teachers solicited money from the outside public, so they had a fair amount of money for their prize list. One of our judges had sufficient time to go over their exhibit and give the prizes. The children were delighted.

A SOUTH MOUNTAIN MEMBER: I do not see why we should waste time on this matter. We can leave it with each Agricultural Society as to whether they hold their fairs jointly or not. In our district we have municipalities which have no agricultural society. We leave it to the District Representative and to the school teachers. We have 22 schools in our section. Each Society should be allowed to exercise its own discretion in this matter.

MR. AULT, Winchester: It is a question in my mind whether it would be wise to have this thing compulsory. With our fair we have a children's fair. We all know the first day is a light one so far as the crowd is concerned. We now give a silver cup along with the prizes for the school taking the largest number of prizes for three years in succession. Our Horticultural Society has taken that branch up for us, and if you from other districts have not got a Horticultural Society, see that you do as soon as possible, because the Horticultural Society should go hand in hand with the Agricultural Society. The girls and boys of to-day are going to be the men and women of to-morrow. When I look over this crowd I see many silver heads, and we want our girls and boys so educated that they can carry on these Agricultural Societies better than we have. I claim it is money ill spent to go from one section to the other and not have proper places to show your stuff. That is the ground that I take, and I believe that the day is coming when the school fair will be connected with the Agricultural Society as it is part of the Agricultural Society to-day.

THE CHAIRMAN: There is no disposition to make it compulsory that the school fairs and Agricultural Societies hold their fairs together. In a great many cases it works out very well. Others do not favor it. Our attitude is to leave it optional with the different Societies and those most interested in the localities where the fairs are held.

An expression of opinion being taken from the meeting, they unanimously were in favor of leaving this an open matter for the different Societies to act as they saw fit and as best suited their conditions.

Q.—Would it be wise to centralize or consolidate our fair system and do away with so many fairs?

A.—I do not think the representatives of very many of those smaller fairs would wish to set us the example of withdrawing in favor of the other fairs.

Q.—Give names of the five most successful fairs held in towns of 1,000 to 1,500 inhabitants.

J. LOCKIE WILSON: The only answer I can give to that is to consult the Superintendent's report, which gives full particulars as to this.

Q.—Why do not our best stock breeders exhibit at our local fall fairs?

A.—I think they do. There may be some exceptions, but as a rule I think that the men in the municipalities who have taken interest enough to breed and develop the best stock in that municipality are patriotic enough to exhibit at their own local fairs.

Q.—What is the best way to know how many tickets a Secretary-Treasurer sells to new members throughout the year?

J. LOCKIE WILSON: I would suggest that the tickets be signed by the President as well as the Secretary-Treasurer. By doing that, there are a certain number handed to the officers, and you keep count on them. If they cannot produce them, they should put up the money.

MR. EVANS suggested that the Membership Book should show that.

Q.—Are commercial travellers of more importance than the farmers of Ontario, that they get reduced rates on railways while we pay full rates for our convention?

L. J. C. BULL: The commercial travellers had an agreement with the railways which has not yet expired.

Q.—Can a Society make grants from its funds to the Red Cross, Salvation Army and similar organizations without exceeding its powers as an Agricultural

Society? A question similar to this was discussed a number of years ago when this convention proposed a grant of $25 to the Sick Children's Hospital.

L. J. C. BULL: This, I believe, has been done frequently during the last four or five years as a war measure. I do not think it advisable that the directors vote the funds of their Society for any purpose without first calling a meeting of that Society. I think the directors are exceeding their powers if they do that.

J. LOCKIE WILSON: That might be left with the Societies. I do not suppose we would want to interfere with them doing good. If the members decided they wanted to give something to the Sick Children's Hospital or any other institution we could not interfere with them.

A MEMBER: Do I understand that in doing this we would be overstepping the bounds? Our Agricultural Society this fall made a grant of $100 to a memorial fund. Is it right or is it wrong?

J. LOCKIE WILSON: It is rather a difficult question to answer. If the Board of Directors called a meeting of the members of that Society, and they voted a certain amount toward a memorial to those boys of ours who died in France, none of us should object to it. We can very well leave that with the members of the Agricultural Society. If the majority voted to put up a memorial for the boys, I do not think anyone would object. It is trust funds they hold, and the directors could not vote $100, because they have been given that money for a certain purpose. They have no power to dispose of it indiscriminately, as the Board of Directors. They have no power to give away one dollar of the funds of that institution without consulting the members of the institution.

Q.—Should Societies that do not hold a fair, but keep stock, give financial aid to a school fair?

J. LOCKIE WILSON: That is a matter that would also come under the supervision of the members of the Board. Remember, those boys and girls in the school fairs are the men and women who are going to make your Society of the future. I think a little assistance, if you have the money to spare, to encourage your sons and daughters, would not be ill spent.

MR. BULL: The members of the Board should not dispose of such questions without calling a meeting of the members to vote on it.

Q.—Are there any special books for Agricultural Society Secretaries?

J. LOCKIE WILSON: Mr. Percy Rogers, 18 Toronto Street, Toronto, has published a book which we consider a pretty good one. He has a number of those forms printed which the Secretaries say are very good.

Q.—Our Agricultural Society has been agitated for the last two or three years with this question. An exhibitor brings three heifers to our show. He exhibits those. On his good one he gets first, on another second and on the last, third. Is it proper than any one exhibitor should take three prizes in one class?

J. LOCKIE WILSON: The object of the fairs is competition. If the prize lists call for 1st, 2nd and 3rd prize, and perhaps for a number of years a man has been coming and sweeping everything out of sight the directors might very well say that where there is no competition the first winning animal takes first prize, and the other two animals are cut out.

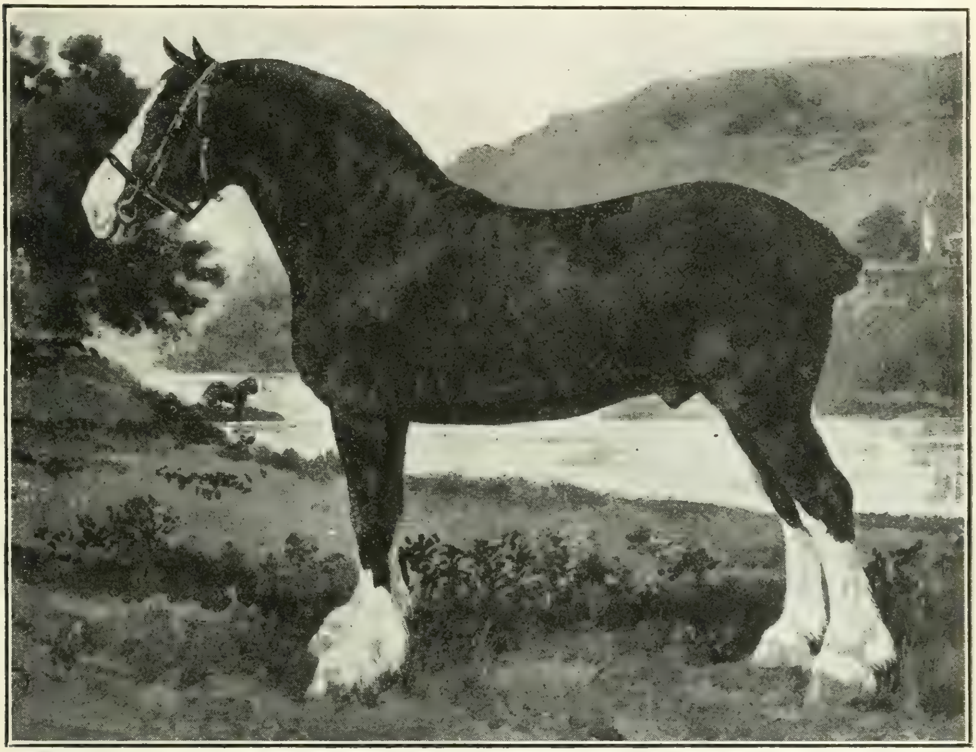
D. EVANS spoke in favor of giving more than one prize, stating that their own prize lists stated that where there is no competition a man can take first and second prize.

MR. HICKSON: The rules and regulations of your prize list should make that quite clear. If a man comes from a distance and intends to exhibit at your fair, he reads those rules and regulations and he comes there, and whatever is on those rules and regulations he is entitled to get.

JUDGING OF LIVE STOCK AT FAIRS AND EXHIBITIONS.

PROF. WADE TOOLE, O.A.C., GUELPH.

It is a privilege at this time to be a Canadian citizen, living in Ontario, and engaged in some sort of work which is of benefit to those living in this country, and the work which you are doing in connection with your fairs and exhibitions, where you do it well, is work of that kind and you should feel proud of it. If you do not do it well, you know it yourselves and you should make some changes.



Clydesdale.

I am not here to pat you on the back, and say you all have good fairs, because you all have not. I have attended some where the manner in which live stock was handled was a disgrace to the show. There are certain things in connection with certain shows in this country, as far as the live stock end of it is concerned, that are being badly looked after, and those I wish to speak about more particularly as I go along.

The first thing you must keep in mind in connection with your fair, to my mind, is to keep them of some educational value. They have very little reason for existing if they are not of educational value to those who attend them. Whether or not you agree with me I do not know, but I do not believe in playing up strongly in the rural fairs in this country such things as midways and the "cane you carry away" idea, and relegate your live stock to the far end of the grounds where the young people never see them. A man on the land who attends the show must be fit for his work, and he goes to the show to get something out of it which he hopes will make him more fit for his work. True also, the man on the land is a busy man and generally does more work to my mind than he should do. I believe firmly that he should take more recreation than he does, and you must, of course, provide in your fairs something to meet the demands in the way of recreation. True, also, you must provide for him something which is going to give him a sense or knowledge of success in his own business. That you do when you provide a wide prize list, which gives him a chance to compete and win alongside of his neighbor in fair competition. Nothing will give him a sense of success like keen competition and good winning.

Now, I said that all fall fairs in Ontario to my mind are not successful fairs. I noticed in the Question Drawer a question came up as to whether or not there should be some amalgamation of fall fairs. I am speaking only of the live stock end of it. I do not like that word "amalgamation." But this is an age of co-operation, and if you have four poor fairs in one community, if you can get together—and you should be able to get together because I take it that you are reasonable men and that you are moderate men and that you are ready to respect the other fellow's viewpoint and that the other fellow is ready to respect yours—if you can get together and can make one good fair, then you are doing good work for the agricultural community in this country and that is justified in some instances.

If you are going to get co-operation, you must get more of the young blood of the community on your directorates, because you cannot teach an old man new ways. He will not learn them so readily as our younger men. I believe you should have men, young men on your directorates, and you should co-operate a little more. Now, all successful rural fairs, all successful fairs in this country, depend for their success very largely upon the live stock exhibits. You all know that. The larger fairs are very anxious every year to get out as large an exhibit of good live stock as they can bring together, because they realize that the very existence of their fair depends on that live stock exhibit, to a greater extent possibly than some people believe.

The size of your live stock exhibit depends a good deal on the community in which you live—upon your prize list, upon the regulations and upon the judging which is done in that show. Of course, if you are in a district which is not essentially a live stock one you would not expect a large exhibit of live stock, and you would possibly arrange your programme to pay more emphasis to the other crops which are more important in that particular district. The management of a show has a great deal to do with the live stock exhibit. I do not intend to say much about that, because you have all been managing shows. I will say this, because it comes right in under my subject, that you have to be very careful about the judges you appoint to judge the stock in that show. Every Tom, Dick and Harry is not capable of judging all classes of live stock. Even the best of our live stock judges in one particular line should not be asked to go into a show and judge two or three breeds of, say, horses, there, and a half dozen different breeds of live stock in the same day, and make a success of the job. When you ask a man to go in and judge all breeds on the same day alternating a class of Aberdeen Angus cattle with one of Shorthorn cattle and so on, where is the man who is competent to handle those classes one after the other and give satisfaction to the breeders and exhibitors and the onlookers in all cases? I believe you should pay better attention to get good judges, and the best judges you can get are men who are known as successful breeders of the particular classes of stock which they breed. On the whole, they give the best satisfaction at the fair. The successful breeder must be a pretty good judge of the class of stock he is breeding, otherwise he could not be a success.

Then it is often advisable—not always, mark you—but it is often advisable, to get your judge from some distance from where your show is being held. I am not saying that to implicate the man near at hand, or that he would do anything crooked in the way of placing his awards; but he probably would not feel just as free about going into the ring where he knew the exhibitors personally and where he knew all about the stock. I would sooner bring in a man from outside, provided he were a competent man, and have him place those awards and do it according to his own judgment. A great deal depends upon the judge you get, as to whether or not the best breeders in your home community are going to bring out their live stock every year and exhibit.

I would make it a rule that every animal in the horse and cattle classes, outside of very young calves and foals, should be halter broken, shown on a halter, and properly exhibited before the judges. I have attended rural fairs in this Province, the best sections of this Province, where all breeds of cattle, dairy cattle, beef cattle, cattle of all sorts and descriptions were driven into a yard at the end of the exhibition grounds, and the judge had to go in there and pick out his animals and place those animals. How in the world can he do justice to himself or to the exhibit? A man who will not take enough interest to halter break his cattle to put them in the proper condition for showing should not be encouraged very much to show. It is up to him if he is going into the business at all, if he wishes to show the people anything of educational value, to show his cattle properly and his horses properly, and I would see that that were done properly if I were a director on a local fair board. There is no man who can go into a group of cattle of that kind and do satisfactory placing. And what educational value is it to the people round about the ring who are looking on? They cannot tell what classes the judge is judging. They know absolutely nothing about it; they see a motley aggregation of cattle running loose and it looks very much like a crowd that some drover had bought up and was feeding.

In your prize list it is good policy to pay particular attention to those particular breeds and classes of stock which are being bred in the largest numbers in your own community. A delegate here raised the question a few moments ago as to whether a breeder coming in with three animals should get three prizes. To my mind I would not care if he came with twenty, if every one of them were good animals, well fed and brought out in proper condition. But if this gentleman brought in one good animal and figured he was not going to have any competition for the rest, I think the judge should see to it that he was not going to get a prize for an animal that was not worthy of it. To my mind you can do nothing better than to encourage bringing out as many as they have, provided they are good, but I would see to it that no prizes went to animals which were not in the proper condition to merit the prize which they get.

In the arrangement of your cattle at your show, your breeds should be kept separate—they should be tied separate. Have a place for your dairy cattle, a place for your beef breeds, and not everything mixed indiscriminately. Of course at your smaller shows you have not too much stabling, but where they are stabled keep the breeds together. The same is true of horses, of sheep and of swine. Do not have a pen of Berkshires, then a pen of Yorks, and away off somewhere else the same mixture.

I believe the time is coming when our larger exhibitions and possibly some of our more progressive smaller shows will adopt some system of a graded prize list. On that system a prize will be greater if a man has won on strong competition, and smaller if he did not have so much competition to encounter. They have done some pioneer work in Western Canada, at the Calgary Show, in that respect. Where you have a large number of animals the man who wins is entitled to probably a little more money than where not so many animals are present.

I believe, too, that it would not be a bad thing in the cattle classes, for instance, if every mature cow, particularly in our beef breeds, were required to show with a calf at foot. I know that all breeders will not agree with me there, but if you required in your prize list that mature animals must have a calf at foot, you are sure they are breeders.

In your pure-bred work, of course, you should be sure that the animals shown are pure-bred, and if necessary demand the papers for them. See to it that nothing of a nature which will eventually injure your show creeps in.

Shearling Southdown Rams.

Another thing that is done by some breeders, but not by all—especially at our larger shows (and I have heard them admit it and they were sorry for it, and that it should not be done); they will borrow other people's cattle and show them under their own name. That is wrong; you all know it is wrong. The man who does it knows it is wrong, and he cannot hide behind the excuse that he wants to make a good showing for a breed, because if this were the case he would show it under the owner's name. I would see to it in my rules that that borrowing was cut out; and I believe proper rules, properly enforced, would cut this out.

There are exhibitors who openly object to the decision of a judge. First remember that you should get a good judge, and if there was a cantankerous exhibitor who persistently grumbled at the judge's decisions I would fire that fellow from my exhibition for about two or three years, and I would teach him a lesson that the man I had brought there was competent to judge, and that I was not going to stand for any abuse of him by anyone.

In your dairy breeds, if possible, keep them separate. In the beef breeds and in the sheep and in the swine do the same. Even at some of our larger exhibitions you will find two breeds of swine in the same class. You cannot teach any man what is the proper type of any breed in this way. What kind of an idea of breed type does the man who is watching that show get from watching the judge making the awards where there are two breeds in one class? The judge does not know what to do where there are two distinct breeds in a class.

In your cattle sections, even at the smaller shows, do not offer prizes for the best beef animal of any breed in your breeding classes. Do not bring these pure-breds of different breeds in the same class.

In sheep you often find a prize for the best long or short wools. They should be shown separately; there is no advantage for anyone but for the man who wins the money, and he is simply showing to win and not for the purpose of education by showing two breeds. I think at this time that even our small shows should have proper classes for the lamb for meat market purposes. The market at the present time is demanding 90 or 80 lb. lamb. I believe you should have that market class and have a competent drover or competent stock man to place the awards on that market class, because after all the end of all that stock is the block and we must produce the stock that the market demands.

To my mind the future of the hog in Canada is wrapped up in the bacon hog, and we must do all we can in this country to promote the idea of producing more and better bacon hogs at this time if we are going to meet competition in the market. While Central Europe is short 2,000,000 hogs at the present time, they will soon be back to normal if they are allowed again to get on to the British market.

Get good judges: it is not very difficult; there are generally some good fellows not far from your own show who would be glad to come down to your show, judges who are competent to do the work. And do not ask them to judge all classes on the same afternoon. I believe also you should make it as easy as possible for those who attend the fair, to see the judging done, and I would make up a small ring in your show ground and put up some seats around that ring, and make it easy for the people to see the judging done. And I would have the man who was doing the judging give a demonstration on some particular class, and tell them why he did what he did, to point out the points of the particular animal he was judging. They do not all see this thing. Moreover, when the judge knows he has to give reasons he gets these points in mind, and he is able to give the boys around some ideas on his placing. I think that is important, and a thing that is coming in this country. Get a judging ring, provide a few seats, get a good judge, and then have him give some reasons for his decisions. It is necessary that your judge have a fixed type in mind, that he knows what he is doing when he goes in the ring, and that he knows how to place his cattle. The man who requires a score card is not of much use at this time. The only use of the score card is for students to get into their minds some of the relative importance of the type in question. The man who has to rely upon some notes that he has stuck away in his pocket is not a reliable live stock judge. He should know what he is doing and why he does it from the time he steps into the ring until he is through.

Now, if he is judging horses, for instance, he must take into consideration, first, his type, if it is a pure-bred animal. The type of breed is of importance. Then, of course, he must take into consideration his type, whether it be draught or light horse type, whether he has size and substance in his draught along with the quality. Our draught horses have been getting altogether too small, and we have to put in a little size and substance along with the quality. And your prize list for your rural show should be pretty distinct to bring out the value of that draught horse, for to my mind there is no horse for the average farmer to-day that is going to pay him to produce anything like the really heavy horse. We have too many nondescripts, and horses which are not very saleable at the present time. If there is a future for any horse outside of the few fancy light horses which will always be in demand, it is for the draught horse.

In beef cattle you come to the same thing. Breed first; then you have to get that low down thick sappy animal straight in lines, and get plenty of flesh down the hind-quarters,—the animal which will meet the ideal for the butcher, an animal which has lots of room over the back and over the hind-quarters, an animal with a strong constitution, an animal which will economically convert the feed which you give it into human food.

In dairy cattle, you must have indications of milk production, and about 30 per cent. in the value of judging goes to the udder.

Sheep: We have a million more sheep in Canada than we had before the war. The price of wool in 1914 was 14 cents a pound, and in 1918 it was 68 cents. Naturally there is more interest in sheep now for that reason. Get your pure type—your wool type, and then get your mutton type.

We must have a sheep that conforms pretty closely to type. We like the fleece good and thick, with a nice pink skin underneath. In the mutton type you want the thick neck, deep shoulders, big broad back with lots of flesh.

You all know the importance of the bacon hog, and you know the type, and I would see to it that better prizes be offered for the bacon hog in the prize list, unless I were down in Kent and Essex in the corn belt. If you are in the corn belt, produce the kind of hog which suits your conditions best, and you know the kind of hog your breeders produce and you can arrange your prize lists accordingly. I know you have done a great work, but this is an age of progress. We must not become fossilized. We have got to get young blood and give them a chance. We must be moderate in all things and make changes only when it is patent to us that those changes are necessary.

What I would like to see done is that all fairs in Ontario which are not up to standard be brought up to it, either by co-operative effort or by the men themselves taking a little stronger hold of the fair that they have under their control and making the regulations such that none of the live stock which comes out is of the kind that you would not like to have at your fair. I would like to see more live stock coming out to these shows, and the first thing you must do is to insist upon a better handling of that live stock at that show, a better grading, a better opportunity for the people to see it in the ring, the best judging you can get, and then try and work up an interest in your community. If you need more money to help you out, if you show them that you have the proper idea and that you have in that community an Institution which is of value in that community, to both the urban centre and the rural community, they will come across with sufficient money to make your show the success which you hope to make it.

JUDGING SHEEP EXHIBITS.

Robert Miller, Stouffville.

One impression that has been left in my mind in my judging experience is that it is not always possible to say why you place one animal first and another second and another third. You always have one friend in each case, the man who gets the first prize, to whom you pay the compliment of saying his animal is particularly good. But the man who has the second prize animal never likes the reason why you place his animal second.

But I propose this morning to speak first of the types of the different breeds that had to be established by the judge and by the exhibitors before they could make a success of breeding that particular class of animal. The reason that I judged at Guelph Winter Fair for nine consecutive years at their show was to make an endeavor to fix a type for that district. The breeders and the feeders of this country should aim to produce the animals most suitable for the market.

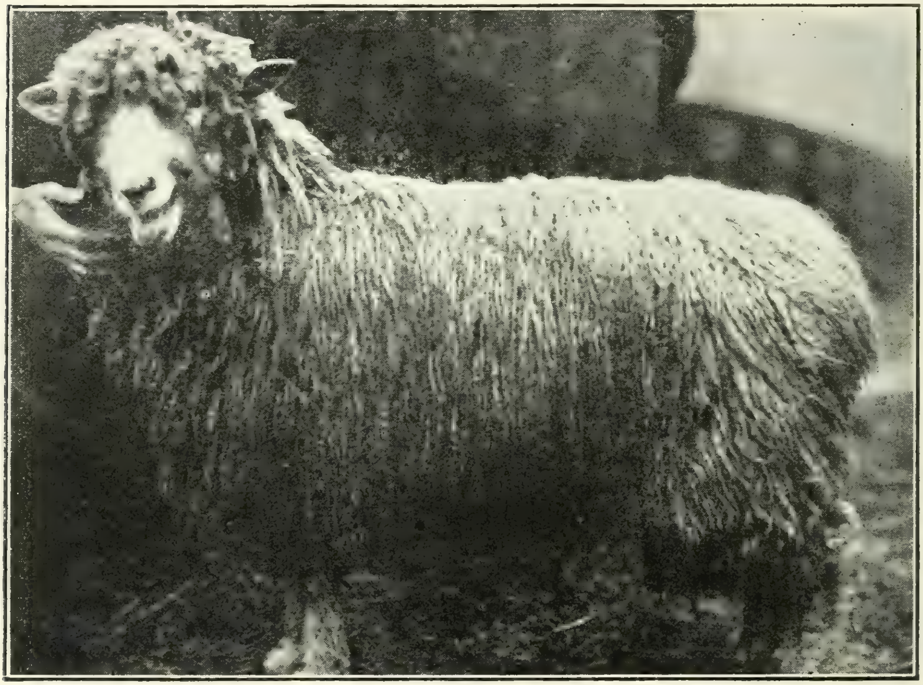
The directors of that show said that this must first, second and always, be an educational institution. That was their chief reason for holding that show in Guelph, and they did this in order to teach people the lesson that they should remember,—we must get the same judge year after year, and, if possible, get the judge that has had experience, and who knows the type of different breeds which he is going to judge. That is what they told me when they came to me to judge year after year, and to give my reasons for placing the animals. No man has endeavored since that time to give his reasons for placing the animal. None of the other judges seem to care about doing it, but I did not hesitate about doing it, because it did not make any difference to me in a financial way whether I pleased the exhibitor or not. I was sorry if I disappointed anybody.

When he has a class of cattle or sheep or horses—and this applies to all classes and breeds,—the first thing he should take into consideration when he comes to set one animal over another is the type of the breed which he is judging. That is the first thing for him to see, and you can see that without touching your animals.

The second thing for him to see, is whether that animal that he purposes or thinks is the best one in the lot, is a really useful animal: type so far as little fads and fancies are concerned does not amount to anything.

It is easy for a man to say, I want to buy a sheep of a certain breed, and I must have it particularly well covered, I must have the wool particularly fine. That man has a fad, and he is the easiest man to deceive when you are selling him something. If you show him an animal that is extremely well covered, that is what he is looking for. He forgets everything else, and if you show him an animal that is covered as extremely as he has been looking for, you can get more than that animal is worth, because nine out of ten times they have faults which amount to a great deal more than that good qualification which he is looking for. It is not a good thing to be carried away in your breeding operations or selections by little fads of that kind. Many men have been deceived into buying animals that were long in the necks, long in the legs, bare in the backs, and they had almost every conceivable fault, but they were well covered on the heads, and that man bought them for that reason. We were all more or less carried away by little fads of that kind and easily deceived, and perhaps on more than one occasion I have been deceived, and then in turn innocently deceived those who were buying from me.

But it was not very long until the practical man found the practical way in which these things were considered in Great Britain where these breeds originated. It was not very long until we found that no matter what your breed of sheep or cattle was, you must in the first place get a useful type of that breed if possible. For instance, there are a few rules that cover every breed or class of animal. You want a big animal of that breed, and in every case you want a short-legged animal. I don't care what it is, whether sheep or race horse or cow of any breed, the short-legged animal is always the best. Male or female, this always applies. Get a heavy legged animal. That weight assures you that it has big ribs, deep shoulders, good wind; that it has a thick neck—you want a thick neck always in a sheep—and be sure that all along the back you will find the muscles heavy. In Great Britain an expert will go in to buy a lot of sheep, a lot of fat yearlings, all fed alike, all bred alike, uniform; they look alike, but you go in and just see if they all feel alike. He will put his hand along the neck and the back, and he knows the condition of those animals, and he can tell you within one pound each of how much they will dress. He will make the man an offer for them and he will not be out sixpence. That shows you how much the muscular development means all along from the back of the neck to the tail. A great many men will smile when they see a man do that. He will do that and in two or three minutes he will make up his mind how much he is going to give for those sheep. He may leave, and another man will come along, and there will not be 12 cents of difference in the offer of those two men.



A Winning Cotswold, owned by J. D. Brien.

It is a splendid thing to have type, because your animals will be bred uniform, and a uniform short-legged heavy backed animal will always command a high price.

We may go into a ring and judge them as if their usefulness did not amount to anything if we go by the little fads. All you want in the make-up of your sheep is just enough in the covering to show that they are of a good type of that breed. You want the general usefulness. You want the short legs, the big round ribs and the good body.

Then, as Prof. Toole has told you, you want to see your sheep brought out in nice condition. You would not think of showing a driving horse without putting a nice clean harness on him, without combing his tail out nicely. No one would do that. A great many people would not show their cattle without preparation, but some of them do. You have seen cattle with burs on their tails, but their owners do not take the trouble to remove them, because they are *only cattle.* They like horses and sheep better. If that is the case, if they don't like the cattle well enough to clean them before they lead them into the ring they had better stick to the horses and sheep, and if they do not like the sheep well enough to trim them up into presentable form before bringing them into the ring they had better stick to the horses.

In order that sheep may thrive well with a man they need a little care, and at the right time. It is a splendid thing to do these things at the right time. They need only a little bit of attention. Men will actually tell you that they will need no attention, and they will give them no attention from the spring of the year until the fall. But they need it, and they should have it, and there is no breed of animals that will be better for a little thought and attention than your sheep will. Sheep have been called "scavengers" in this country, and they will scavenger for a great part of the time, but you must not let them make their living by scavengering entirely, because it is not good for them.

Now there are some things, that are small things, that you should decidedly object to when judging pure-bred classes of animals. In the black-faced breeds of sheep you should object to horns in your male animals. You do not want any horns in the Shropshire, the Southdown, the Oxford, or the Hampshire. That is a weakness of those breeds and must be fought against. Get a good head on him, good bright, big eye, fairly well covered, but do not allow yourself to be carried away with regard to that. Have a strong neck in your male animal, otherwise he does not look masculine. Get strength of constitution and weight in both your males and females. That is what you want for a breeding class. You want substance for that. And when you are judging sheep, or when you are selecting them to go to the shows, pick out animals that will fill the bill in those particulars. We are getting to be more practical in this country, and if a man sees a very rangy, long-necked horse he is more likely to find fault with him than to make the remark that we used to hear: "There is a long rangy horse and *stylish.*" We do not want stylish things in that way.

There was a point raised by Prof. Toole in regard to mixing your breeds. I have had something to do with regard to mixing prize lists, and that was at the Toronto Exhibition. I may just as well account for doing certain things that we have done there by way of experiments, because it may be useful to you. We have one or two breeds each represented in the Toronto show that have been very weak—very small in numbers—so that we thought we could not make good classes of the breed without making a present to the owner of the animals of the amount of the prize without competition. One of those classes was for thoroughbred horses. We made two prizes for males and two for females, and made that cover the ground. Rather than mix your breeds and give your prize money for breeds that are not raised in that district, give a prize for the best male, and a prize for the best female. Rather than mix your breeds, I would mix the ages of the same breeds, so as to fill your classes, but by all means do not encourage any man to bring in animals of objectionable type, by giving him prizes for animals that are not fairly good specimens of the breed. And do not hesitate to tell him the reason why. Just say to him that you do not think it would be creditable to that show or to him, for him to be able to take those animals home and at some future date represent them as being first-class animals because of what they had won at the show.

I was very much interested in Prof. Toole's address. I have known him since he was a boy, and he has grown up quite suddenly, and he has got to be a big fellow while he is quite young. I believe he is big in more ways than one. He was a neighbor of mine when quite a boy, but he has covered a lot of good ground, and he has done very well indeed to-day.

There are one or two things I want to mention. There has been a small organization formed in this country with the intention of trying to induce the farmers of this country to increase their live stock, believing that if it is going to be possible at all to unload the burden of debt that hangs over the country it has got to be through the increase and the improvement of the live stock on the farms of Canada. There is more room in that direction to improve and to increase the wealth of this country than there is in any other direction. The greatest gold mine that we have, is the farms that we own, and the best implements to take the metal out of the ground are the pure-bred and the well-bred animals that we have in Canada. So there was some little time ago, an effort started to induce the people to improve and increase the number of their good animals. But things took a change. We were told from Great Britain one day that the packers in this country could not send over any more bacon for some time, that the orders from the Imperial War Board would stop, and that the packers themselves could not even make private shipments out, so that things looked pretty bad. And that was just about the time we were going to make an effort to start this production campaign. You have heard of production campaigns in the last two or three years, and the farmers of this country responded to the invitation very liberally, and even if we are left with a little of those products on our hands, it was a good feeling for us to know that none of our people would go hungry when so far away from home. We were the back line trenches, and I think we ought to be pleased to be able to say that we held them well. You are going to be asked to go on with the campaign of production, and there is going to be a union of men in this country who are going to make a desperate effort to assure you that you are justified in producing more live stock than in the past, believing that this will make more profit for you than any other line of endeavor you could follow. I would like to ask those here to use their influence for greater efforts than in the past, and induce the people in your community (repeat the old, old story as often as necessary until it is driven home) that more should try to produce better animals in this country. We must not be discouraged. Unfortunately in many places that you know of near your homes, there is very little improvement in the live stock shown in the past twenty or thirty years. We should improve our animals, believing, as we do, that that is the greatest prospect of increasing the farming wealth of this country.

SECURING AND PLACING OF FARM LABOR IN CO-OPERATION WITH AGRICULTURAL SOCIETIES.

JOHN FARRELL, FOREST.

The question that has been allotted to me to handle to-day is one of very great importance, but I am going to trespass upon your time for only a few minutes. If there is anything in the suggestions that I throw out, that appeals to you. I will on some other occasion go to your homes if you desire, and take up with you this question and discuss it.

There is one thing that faces not only the Province but the whole Dominion of Canada and the whole world, and that is the great labor problem. You know that to-day there is a great deal of unrest in this country, largely due to unemployment. I am not here to criticize. I am here solely for the purpose of offering co-operation, as that is the slogan to-day that is going to solve that great labor problem. There are many ways in my mind to relieve the obligation that is thrust upon us in this way, provided we are willing to do our part and not expect others to do more than their share. For instance, it has been stated that the agriculturists of Ontario have been adequately supplied with labor, sufficient to meet their requirements of production. I am talking to agriculturists to-day, and those who sympathize with the agriculturist, but at this point I want it to be distinctly understood that I am not saying that the agriculturist's interest should be solely looked after: the industrial end must be looked after as well. But as I look at the future of our country, I feel that the industrial and agricultural interests must go hand in hand in order that we accomplish the destiny that is before us as a Canadian people, and if there is one people more than any other that is blessed to-day it is the Canadian people, because we have here unlimited resources and the only thing that is required of us as citizens is the development of them. How are we going to do this? There is only one way, and that is, knowing as we do that with the great debt that is accumulating upon us day after day, and necessarily so, our obligations must be met, therefore it is patent to every resident of Canada that the resources of this country must pay for that great debt. It all must come from the earth. Some comes from the mines, from the forests and from the water, and from the tilling of the soil, and I might say to you without any fear of contradiction, that the major portion of the indebtedness of our country must come from the first six inches of earth of this country. That means the tilling of the land. And how are we going to till the land? We must secure labor. There is one question that is uppermost in my mind to-day, and that is this: It has been argued from time to time that the returned

Where hill meets dale—a fine farming section.

soldier is to go out on the farm, expecting him to do the work that the normal farmer accomplished a few years ago. They forget that that hero who has won the respect of every true and loyal Canadian has undergone this last three or four years such strenuous work that he is not fit to shoulder the responsibility that he was able to before he went to the war.

And when we are asked if we require labor on our lands, there are two things that come promiently before us, and one is that those associated with the work say that the soldier should get from those on the land $40 to $50 a month, and we who are associated with the work, feel there is nothing too good for the hero that has offered his life in defence of home and country. This is a thing we have to look into seriously, and I do not think it would be fair to impose upon the agriculturists of this country the whole responsibility, but I do say that if there is any one profession more than any other that is going to bring that man back his vigor, it is that upon the land. If he is taken to the land to-day he gets the very encouragement he requires. He gets plenty of fresh milk, fresh eggs, and above all he has pure air, and that is one of the essentials to-day that must be meted out to the returned man if he is going to come back to his former usefulness.

To those of you who have had experience in locating some of these men, I think it is a mistake not to use discretion in the work that is imposed on them. To give you a concrete example, we in our undertaking interested ourselves in a certain returned soldier, took him out to the farm and placed him there with one of the farmers, a typical farmer. There was a threshing machine being used. Judging from the appearance of the returned soldier he would be equal to shoulder any responsibility that would be thrown upon him in farm life. But since he had passed through brain-racking and body-racking experiences, it was not long before the vibration of the machine seemed to touch his nerves, and he collapsed there and then. Now these things have to be considered. You cannot expect the returned soldier to do all and every kind of work, and under these conditions how are we going to pay his salary? I have an idea of my own, and I am not afraid to tell you where I am standing. Those who do not agree with me are my friends when they are prepared to show me where I am wrong. We can say to the farmers of Ontario: "Have you got help?" and they will say "Yes." And they have been saying this when they were not in a position to take care of their farm work. Those who have been soliciting or getting help know that the kind of help available and that has been sent to you has been so disappointing that you simply said, "No, we do not want labor," meaning you did not want the type that was thrust upon you. Now that soldier has partially made up his mind to go on the land. Some propose to-day that that soldier be given a farm and its equipment, and I am here to endorse that if I thought it was in the interest of the soldier and Canada as well to do so. But understand those flowery speeches that have been made to the soldiers, making farm life and work only a bed or roses, for what they are. But we know that it is more than a bed of roses.

What I propose is this: We in the County of Lambton agree that we will undertake to locate 100 of those returned men in first-class, good homes, under superior agriculturists, providing that we have only to pay a portion of what the man should get. Now you know that these men are inexperienced, and if you were to go out on the farm and ask the farmer to take him on at $60 a month, he would not care to say no, because he feels there is no wage too great for the soldier, and he would say, "I don't want help." If we would go out to the farmer and say to him that the soldier is going to your home at his actual worth, and that through other means,—a pension or some other means—the balance of what the soldier is entitled to get is provided for, I can place 100 men in the County of Lambton. Now under these conditions, and with the proper encouragement to the man from the farmer, the soldier will be in a condition at the end of a number of months to know whether he is fitted for the life and all its requirements. With the experience I have had with labor, when he has had six months' actual service on the land, if he then decides he would like to follow farming, then he has taken up the right profession, and we could then support him and put him in the right place.

We as agriculturists of this country want to say to the citizens of Canada that we are prepared to do our part. We are not here to criticize, we are all here to co-operate, to do our part, and to try to do honor to that noble hero who offered his life in the defence of home and country. You remember as well as I do, that when we tried to recruit that army we pledged to that hero that on his return there was nothing in Canada too good for him. That was a sacred promise. Then let us stick to that promise, and, if we do so, you may rest assured that the congestion that to-day exists in many of the towns and cities of our country will soon be relieved and we will be doing not only justice to ourselves but to the soldiers as well. I read in a daily newspaper to-day that there were from 10,000 to 13,000 unemployed in the city of Toronto alone. If the land needs them all, why not attempt to get them out there, and help those unemployed as well as to enhance production.

ADDRESS.

A. D. McConnell, Winnipeg.

I am highly honored in having been invited to come to your Convention in place of Mr. Newton, Superintendent of Agricultural Societies for Manitoba, who was unavoidably detained. He wished me to convey to you the heartiest greetings of the farmers of our Province. Mr. Lockie Wilson, your Superintendent, honored us by attending our Convention last February, at which he delivered an inspiring address, which was much appreciated by the farmers of Manitoba. He gave us an outline of the splendid work which is being accomplished through the Agricultural Societies of Ontario, which now number, I understand, 360. We have only 68 Societies, so that we have some distance to go before we equal you in numbers, at least. Mr. Wilson proposed at our Convention that the breakable, wearable parts of farm machinery be standardized. This proposition of his met with our hearty approval, and a strong resolution was passed and forwarded by us to Hon. T. A. Crerar, Minister of Agriculture for the Dominion, but we regret that no action has yet been taken by the Government at Ottawa on this important matter. The farmers should waken up and see to it that their reasonable requests are promptly attended to.

The Province of Ontario leads in the Standing Field Crop Competitions, and, according to reports, several thousand farmers have taken up this important educational work. We have also been endeavoring to extend this line of work in our Province. We received many valuable suggestions in this connection from Mr. Lockie Wilson when he addressed our Convention last year.

I learn that the Short Courses for Departmental Judges instituted by the Ontario Department of Agriculture have proved invaluable to your judges and have brought about a uniform system both in field crop and live stock judging.

I am pleased to have had an opportunity of being here to-day, and will carry back many valuable suggestions to the members of our Societies in Manitoba. I trust that we shall be favored again at some future time by a delegate from your Association. Our interests as farmers are similar to yours. In union there is strength.

SHOULD THE SMALLER FAIRS BE DISCRIMINATED AGAINST WITH REGARD TO RAILWAY RATES?

W. J. Connelly, Cobden.

I say, certainly not. We have only to look back to the beginning of this recent great war to see where Great Britain would not allow smaller things to be discriminated against such as when Germany, the great monarchy, said to little Belgium, "We want to cross your country to invade France." She answered, "We have a treaty with the nations of the world and we cannot allow it." But Germany's answer was "It's only a scrap of paper." Belgium's reply was "Our honor is at stake." Great Britain said, "Hands off, our rights are at stake," and agriculture is the Great Britain of Canada and she will not stand to have small fairs discriminated against.

If ever there was a time when our fairs should be going ahead it is just now, when our boys are coming home by the thousand and their watchword over there has been "Forward." And what will they say if they come to our fairs this coming fall and find we have gone backward? Up to the last year the railway companies treated all fairs alike in regard to cheap rates, but as you know last year they cut off all cheap rates to small fairs, and when our President and Superintendent saw the situation they went to the proper authorities and laid the case before them, and the very best arrangement they could make was that any fairs who did not purchase at least fifty excursion tickets in the previous year would be cut off the cheap rates altogether, and they were only looking for cheap rates on regular trains and not for excursion trains.

This is not the only place where the railway companies have discriminated against country people. For instance, if you were living in the country and wanted to go to the city you could not purchase a week end ticket: but if you were living in the city and wanted to go to the country to spend the week end you would have no trouble to get a ticket at a reduced rate.

This is very unfair, for the country is the backbone of the towns and cities; for the country, in the past, has been building all the roads so that the farmer could bring his produce to the city that the city people might be fed (of course reaping equal benefit himself), and building roads for the manufacturer to get his raw material to the city, also building the roads for the manufacturer to get his finished product back to the country.

In a great many cases, it is the small fairs that are the real agricultural fairs of the country, where every farmer has a chance to compete against his neighbour. It is only the few who can exhibit at large city fairs.

This discrimination also cuts off some of the largest centres of real agriculture. What I mean is this, I know a certain agricultural fair in the Ottawa Valley that is situated in a little village and that village has the record of being the largest shipping point in farm produce from Montreal to Winnipeg: and that fair, although a real booming agricultural fair, is discriminated against, while other fairs that I know of that do not compare with this little fair get the benefit of reduced rates. Why? Because they happen to have a better track for speeding and more side shows, which I have nothing to say against, only that they are not the benefit to the country that a real agricultural fair is.

I have a resolution drafted to put before this meeting at the proper time, asking the Railway Commission to take some action on this question, which I think will have the desired effect. If not, next year we will have to take the same steps as we did the first year of the war, when the Department of Agriculture cut off our Departmental Judges and notified us that they were going to cut off our Field Crop Grant. That year we went in a body to the Parliament Buildings to interview the Minister of Agriculture, and when we did not get the reception that we expected we would, we returned to this building and passed a resolution asking every member here when he went home to call a local meeting of the directors and pass a resolution sending it to their representative in Parliament, protesting against the Departmental Judges being taken off and the Field Crop Grant. So we bombarded them so much that they granted us our request, and as Agriculture is the Great Britain of Canada we will do the same again if need be.

Applying formalin to seed grain to destroy smut.

It was then moved by Mr. Connelly, seconded by Mr. W. S. Scarf, Resolved that we, the members of the Ontario Association of Fairs and Exhibitions in Convention assembled, send the following communication to the Railway Commision of the Dominion of Canada:

"We humbly pray your honorable body to look into the matter of the discrimination of our railways against small fairs.

"Until last year all fairs were treated alike with regard to reduced rates on their regular trains by the railways of our Province. Last year all small fairs that did not purchase fifty tickets on the previous year were cut off altogether.

"By this order many active Agricultural Fairs which are doing a real good work and are situated in the centre of the best agricultural districts and in very many cases our largest shipping points in farm produce that we have in the Dominion were cut off.

"Our protest is not for the dollars and cents involved but for the principle that is at stake. And that a copy of this resolution and a communication be forwarded to the Railway Commission." Carried.

Moved by A. R. G. SMITH, seconded by WM. HICKSON, "That the delegates in this Convention of the Ontario Association of Fairs and Exhibitions are heartily in accord with the proposition that no new varieties of grain or potatoes be placed on the market in Canada until they are first submitted to the experts at the Central Experimental Farm, Ottawa, and the Ontario Agricultural College, Guelph, and receive their endorsation as being a new and improved variety." Carried.

A member here asked if seed coming from the other side was included in this.

J. LOCKIE WILSON: Yes.

THE ADVANTAGE OF PROGRAMMES FOR SMALL FAIRS.

W. J. HILL, MADOC.

There are several reasons why small Fairs should use a scheduled programme such as I have here with me to-day, and some of these reasons are to minimize the work of Secretary and Directors, to give better satisfaction to exhibitor and patron, to assist in advertising, etc. I might explain why Madoc Fair first adopted the schedule programme. The idea was to benefit the patron and exhibitor and to have each individual see what he came to the Fair to see. As you are well aware, some admire horses, some cattle, dairy products, and others the ladies' department, and you who are Secretaries will understand how many times you are asked just at what time a certain class and event will take place.

MR. T. H. THOMPSON, M.P., who was our President at the time of first drafting this programme, and myself did some very hard thinking, how we could overcome this uncertainty as to the time of events, and also make Madoc Fair a little better or more attractive than our neighboring Fairs, and to do this it was necessary to make every thing we could pleasant for our exhibitors and sight-seers. This is one of our experiments which proved a success in making it possible for each person to see just what he came to see. We first of all decided to have two rings, a small and large one. We had our programme ready, we had our grounds ready, and then came the question of carrying out the programme successfully. To do this we had to have the Directors and Judges at their places on time and to do their part to assist in doing the job. In the first place the exhibitor finds this programme of great assistance in letting him know just when his entries will be called upon, and you know for a director or officer to tell when a certain class will be judged without a programme is impossible. But, you say, the exhibitor can ask the Judge. Now I do not believe in that. I think it is our duty as Fair men to look after our customers and guests the very best we can. Again, it is not the best thing for an exhibitor to be too familiar with the judge. It causes dissatisfaction, and, to overcome this, all we have to do is to hand a programme out, and he has all the information before him all the time. Another thing: Suppose an exhibitor has only two or three entries; he does not have to sit around all day waiting for his class to be called. He simply consults this small piece of paper, and is in the proper place at the proper time. You all well know how tiresome it is to wait around the Fair ground or any place when you could make much better use of your time if privileged to get away. Now this same man who has one or two entries wishes to see the cattle, dairy products, poultry or in fact all the exhibits at the Fair. He can do so by simply following the programme for his exhibits and entries. We also have the customer and patron, and to these people and our Government we owe our existence; therefore I feel it is our duty to make the Fair as pleasant for them as possible. But, you say, what has the programme to do with the patron? Many things. We must give all the information that we possibly can to make things plain so that each may feel right at home. Time and again I have had men come to me and say I would have liked very much to have seen your single drivers judged to-day, but was away just at the time the judging took place. Again others will tell you they have come miles just to see the lady drivers compete, and yet would miss it by not just knowing the exact time to look for them. Others would come to the Fair if they could see certain classes judged, but to spend the whole day they cannot. Others again would wish to do some business that day, and were afraid the exhibitor would be too busy to bother with business. Now this programme will tell just when that exhibitor will be free, and has worked wonders with our Fair to both exhibitor and patron. I have not yet found a man or woman but has a liking for the horse, and it is for this reason that we specialize on horses. You will ask why on horses? Well, we just watch the crowd year after year and it was the horses they followed, so it was a case of the greatest good to the majority. Now, again, I wish to say this programme will show the public you are trying your best to please them, and if you get the people to feel you are doing your best they will go away satisfied, and, if you can get the public in that frame of mind, your Fair will be a success, and you will not be able to keep the people away. Some men who never knew what Madoc Fair was like will say as soon as they look at this programme, " Well, these boys have a full slate, and if I am in hailing distnce I will be in Madoc Fair day," and if we have a nice day not a single man, woman or child leaves Madoc Fair dissatisfied. Think it over, do something to make it pleasant for your customers. You would not believe it, perhaps, but I am going to tell you that you simply cannot keep people away from Madoc Fair. Last year when the rain poured down from six in the morning to three in the afternoon we took in at the gate $350. We had 1,400 paid admissions. I would not have told this, but Mr. Wilson can vouch for it, as he was with us. You will at once say the programme did not draw the crowd. No, but, as I said, it helped; this is only one of the things we do to please. I could tell you many others. Send a bunch of people away satisfied, and you are sure to win just the same as if they are dissatisfied you will lose. We tried this horse judging schedule as an experiment and we hope this year to have everything in live stock scheduled.

You can get your programme printed for little more than a common dodger, and it is money well spent, and it will save your secretary and officers no end of trouble on Fair day. If you adopt it, stick to it to the letter and run on schedule time.

You know many times judges are not through judging by five o'clock. Many times I have heard men say: " I want to wait until a certain class is judged, but they are hanging around and not doing anything." Again, this programme will not cost much, and will pay well in advertising your Fair. I have nothing to sell and am not a printer, but I have found this so helpful I wish to tell others. You know as well as I that there is nothing like having a time for every thing and every thing on time. Just tell me how your Association would get along to-day if we had no programme and schedule.

If I have helped you with my suggestions I am gratified and I am sure if you adopt this form you will be satisfied. If there is any question I have not touched with regard to programme I will be pleased to answer if possible.

EDUCATIONAL VALUE OF CORN EXHIBITS AT FAIRS AND EXHIBITIONS.

L. H. Newman, Ottawa.

This is a question which I am sure you will all be very much interested in. There are one or two features which I want to bring before you to-day, which I am sure you will consider of much interest.

We welcome this opportunity of meeting the delegates of the Agricultural Societies of the Province because I have always regarded this great agricultural organization as a very powerful factor in the educational life of the Province. I followed, however, with more particular interest the development of the Field Crop Competitions which have been carried on so successfully in many districts during the past ten or eleven years. I understand that during the past year about 7,500 farmers took part in these Field Crop Competitions. I have heard, not very often it is true, but I have heard on one or two occasions the idea expressed that the Field Crop Competition had about outlived its usefulness. Now, I do not agree at all with that idea. It seems to me they are just beginning, that they have just touched the fringe of the good they can accomplish. They have done a great deal, yet there are still one or two ways in which progress can be made.

And that leads me to the essential point that I want to bring up to-day at this convention, and I will state the case in this way. A good many of you know probably of the annual demand for good seed of various kinds. Sometimes it has been in one part of the country, sometimes in another. This year there is a particularly big demand for seed oats. At the present moment the Dominion Government is trying to buy over a million bushels of seed oats in the Province of Ontario. As Secretary of the Seed Growers' Association I am receiving orders every day for large quantities of registered seed, because that is the class of seed our Association deals with. We are short now about 40 carloads of Registered Seed Oats. We have a man in Prince Edward Island now getting together an order for ten carloads. Now why is it we have to go through Ontario, with between 300 and 400 Societies competing in Field Crops, away to the far east, to obtain this seed grain? The men in the Province are growing fairly good seed in many cases, but they don't know the name, and the variety, in some instances. In the majority of cases, however, I think they do. But when people come to you wanting information as to where they can get a carload up to 25 carloads, at good prices—they expect us to be able to tell them where they can get seed that we can vouch for. Now, it seems to me that the Agricultural Societies are in a position to make their work a good deal more profitable, at least in some cases where they can grow seed for sale.

We can not risk our reputation in placing oats that are not registered and for that reason we have to go to Prince Edward Island, which grows seed so as to be recognized officially, although I have not a doubt but what just as good seed is grown extensively all through Ontario. A step was made last year at your convention to improve the situation somewhat in your Societies by encouraging the reduction in the number of varieties grown in your competitions. That has been brought up at this convention. This, of course, is a free country, and I know perfectly well that many farmers have their own pet variety which they will cling to in spite of regulations. If you can first of all get your members to grow one variety you will accomplish a good deal.

Covering the grain while the formalin does its work.

I have gone over the Appendix of the Annual Report. I took a certain number of Societies, and figured out that there was an average of twelve competitors in each Society growing an average of five different varieties of oats. That simply means that you cannot go into a Society and pick up a carload of one variety. But it seems to me that you delegates when you go back to your Societies will accomplish what is a desirable feature if you will point out to your farmers that they should get together, and get as many as possible to grow just one variety, and as many as you can to sow registered seed. It does not cost any more to grow the registered seed. It is simply a seed of recognized breed, and, if the season is favorable, you get through with a high quality of seed and are right in line to have that recognized officially. Our regulations were changed somewhat last year, because we found that under the old regulations which required that each grower should operate a seed plot, we were not getting anything like as much good recognized seed as the Dominion of Canada is demanding, so last year we amended our regulations to permit any farmer to purchase registered seed, handle it exactly as an ordinary grower, have it inspected by an expert, and reported on. Then those reports come ultimately to our office, and if you have a quantity to sell you stand in line to profit by that recognition.

We had to go out of Ontario for all our registered seed. There are a few cases where we can get a small quantity, but few where we can get a carload. We have a carload made up at Carleton Place at the present moment which is going through to Western Canada. The first generation is being sold at $1.75; $1.50 for the second generation; $1.25 for the third generation. When ordinary commercial oats are down to 50 cents a bushel registered seed oats run around $1 a bushel. And if a man can sell 500 bushels at $1 a bushel and buy pig feed for 50 cents a bushel, it appears like good business. Our object is to have a better class of seed than is usually produced and in much larger quantities. I have been connected with this work well over twelve years, and not in one single year during that period has there been enough seed of all kinds in Canada for use in this country. We require about 40,000,000 bushels of seed grain every spring to seed down the land that is devoted to grain growing in Canada. That is a good deal of seed. A large quantity of seed goes into the ground every spring that should never go there. In Western Canada it is becoming increasingly difficult to get grain free from wild oats. Last year we had an exceedingly bad crop through the west. Another reason for the scarcity of seed this year is wild oats. These are the things which to my mind present an opportunity for those Societies in Ontario where wild oats are not prevalent, and especially those Societies which sell oats more or less, to give some attention to the pedigree of the oats they are sowing.

A MEMBER: What are you claiming for registered oats?

L. H. NEWMAN: Registered oats are simply oats which are known to be pure as to variety, free from weed seeds and other grains, and germination 95 per cent. There are lots of oats in Ontario which probably have that standing, but the point I am getting at is that you may have a carload of oats which you are pretty sure are O.A.C. 72 and they were germinated perfectly, but we do not know anything about that. We cannot accept that; we must see it in the field. We must establish some sort of a link between the grower who is in a position to grow and is producing stuff, and an organization such as our own, which is required to act as a sort of a clearing house between the man who wants seed and the grower who has got it. We are receiving demands in increasing quantities every year. The other day I got an enquiry for some seed corn. A gentleman in the east had got seed corn with our official tag on it, and he wrote back and said, "I want fifty bushels of seed corn; I do not care what I have to pay for it, if you can vouch for it." Now, the seed corn situation has been in a chaotic state for a good many years. It is improving somewhat. I have just come up from the Corn Show at Chatham and was very much impressed with the improvement over a few years ago.

Speaking of seed corn, I am sure most of you are interested in it more or less. In Eastern Ontario growers found by experience a few years ago that they could not always depend on the Ontario grown seed corn. It was not always of good vitality, and they came to purchase quite extensively American corn. Now, as a rule, American corn is not quite so well suited to our conditions; therefore, so far as the seed corn is concerned we are trying to encourage good men, wherever we can get them, to carry out a system of corn producing and to grow corn for registration and offer registered seed corn for sale.

I will cite a case to show you that it is comparatively easy to produce this seed corn. I was perhaps one of the first to judge seed corn in Field Crop Competitions in Essex County eight or ten years ago. We were judging the field crop of a man in Kent County. He was rolling his wheat land at the time. He jumped off his roller and came over and showed the greatest interest in seed corn. He wanted to learn everything I had to give him, which was not a great deal at that time. He was after all the information he could possibly get as to how to select seed corn, how to breed it, build up and improve it. We got him started in growing a seed corn plot through the Field Crop Competition. He made a great success of that corn. I became acquainted with another grower up in Essex County, who was a great friend of his, a great student of seed corn; at the present time he is exhibiting at the Corn Show at Chatham. He took first prize for the best bushel in the Province, first for the best ten ears in the Province, and first for the best ten ears in North Essex. He has a quantity of seed for sale each year. We have only three men who have registered seed corn for sale at the present time. I am interested in seeing people get good seed, and I will give you any information you want as to who has this seed, where it can be had and the prices they are asking. The same way with the other grains. I have samples here of oats and barley, the names of the men who have them, the certificate number, the generation, and the prices they are asking. I would certainly like a number of Societies, at least, see their way clear to make a start in this thing. If it would be possible for a Society to get eight or ten members, even, who were interested in the Field Crop Competition, to get some first generation registered seed and then have it inspected in the regular way, and to offer some of that for sale next year, we might be able to make up a carload or two in some of the Societies, which would help considerably. When in Essex County last week I was discussing this with the President of one of the Agricultural Societies and a number of other men and they were quite enthusiastic about it. They are going to try and do something. They are hoping to be able to get an elevator and to put in a cleaning plant where the different growers can bring their seed and have it cleaned and sealed up, because we will be glad to have a man there to do this cleaning and inspecting. But the main point I want to

bring to your attention here is that I wanted you to know something of the opportunities that exist at the present time in connection with the seed business. In Quebec, they are making good progress along this line. They have an organization established at St. Rosalie Junction for the Province, composed of 500 farmers, who have bought stock in that concern. They have an up-to-date cleaning plant and storage room for about 200,000 or 300,000 bushels. They have made a splendid reputation for themselves on account of the excellent quality of grain they are able to put out through these cleaning machines. They have machines there that they got from France and Belgium. They can take out of one cleaning in oats, ten grades of stuff.

Q.—What are you paying for pedigreed oats?

L. H. Newman: They are bringing $1.75 per bushel for first generation; $1.50 per bushel for second, and $1.25 for third.

Q.—What variety are you buying for that price?

A.—Banner.

Q.—Do you buy or sell for that price?

A.—They are selling at that price.

Q.—Do you pay the same price for O.A.C. 72 as for that?

A.—There is no set price. We receive more orders unfortunately at the present time than we can fill. Registered seed oats have been cleaned up so well that it is pretty difficult to get any great quantity of registered seed. Seed houses from all over the west have been scouring the country for them. However, W. L. Dixon, of Varney, is offering some registered Banner, second generation. He has only 65 bushels left. We asked him to hold a few bushels until after this meeting. All the rest of his oats went to the Steele-Briggs Seed Company.

Now Banner and O.A.C. 72 oats are the varieties that are in demand. It is true O.A.C. 72 outside of Ontario, has not the demand that Banner has. F. Dilworth, Kars, North Gore, Carleton County, is offering a quantity of Banner oats, first generation, at $1.75. Those oats may be sold by the time you write.

I think you will be able to get quite a quantity of O.A.C. 21 barley from A. W. Vansickle, Onondaga, second generation barley, at $1.75, germination 100 per cent.

Those of you who are interested in seed corn, if you are in a district where you can grow seed corn, might write John Parks, of Amherstburg, or Blake Cohoe, of South Woodslee, also A. S. Maynard, Chatham.

A good many are interested in potatoes. Most Societies have a great many varieties of potatoes. Some of these varieties are mixed. Some of our growers have registered Green Mountain up to about 100 bushels. You can get these from Garnet Hamilton, of Navan. Potatoes sell at $2.25 a bag.

W. F. Fisher, of the Soo, has 35 bags registered Green Mountain at $2.25 per bag. In the Algoma District Chris McBride is offering a carload of registered Green Mountain potatoes.

D. M. Campbell, President of the Farmers' Club of Blenheim, has 3,000 bushels of seed corn, Dent and Flint, which he claims is good.

PREPARING SHEAVES AND GRAIN FOR THE LARGER EXHIBITIONS.

WM. HICKSON, BOBCAYGEON.

During my work of judging last year I met a young man at Indian River, and he said he would like to put up a sheaf, and that he had heard I had put up some sheaves. I told him I had put up a few, and he said he would like to know how. I told him, just as I am going to tell you, how to put up a sheaf that will probably win, or run a good chance of winning. After I showed him how I did the work, he put up a sheaf which took the first prize at the Canadian National, while mine took second.

Go to your field as soon as you know you are one of those first five prize winners, cut with the sickle, because if you cut with a cradle it cuts the heads. The next thing you do when you have cut it, don't leave it out to be weather-beaten or dew colored. Bring it in, put it in the granary, spread it out thin on boards, and leave crevices below. If you have about 4 in. lumber, leave spaces so that the air can come up through it. You want to cut about six good sheaves. My experience in the work is that if you go out in the field and cut two good sheaves, when you get it all selected you will find you have only about half a sheaf.

When it is thoroughly dry, I take about a dozen or perhaps twenty nice heads. I can put up two sheaves in a day and box them nicely, to come on to the Exhibition. I make the centre about 4 in. and have the centre rather higher than the outside, keeping dropping a little all around; of course, there is a little art about making a sheaf. And when you get it about 4 in. thick, take that 4 in., take a nice cord, pull it right through the centre and bring it around opposite ways, and tie it, but not too tight, otherwise you break the straw. Then just take it the opposite way at right angles, draw it through again. Next, put a cord around the centre; then about a foot or so from that put another one. Make three ties of that. Then, when you have done that—I have two pieces of board (illustrated with cardboard, showing red line through the centre crossways, and a hollowed out circle in the centre). I found that I could not keep my sheaf round, it took me too long to get it round, and that is why some men will say it takes them a week to put up a sheaf. That little strip there (the red line) indicates where my two boards come together. When I set that down on a table, it sets firm. And when I have my centre done, the next thing I do, I start and arrange about one inch around there. You will find it measures about 8½ in.

When you put your top board on you want to press it pretty tight. The circle in the centre of the board solves the whole problem in the way of keeping it round. Four inches to begin with in the centre, then one inch all round and there is your six-inch sheaf. Then I just tie it around three times, and I drop it out for about another one inch around. Then I press this down. I have two little rubbers that come at the edge of the board, and I clip one at each end. If you have none, tie a cord around it and you can fix these tops and the whole thing permanently. I tie it about six inches below the heads.

After you have your 8-in. sheaf made up, you shear the butt off straight. Then the next thing is to make your box. If it is a wheat sheaf, your box should be 16 by 16 by 6 ft. long. If an oat sheaf 18 by 18 by 6 ft. long, or about that.

When you have done that, the next thing you have to do is to cut a little semi-circle, and fit it inside the box. I will explain to you why I make the oat box 2 in. bigger than the wheat box. It is simply this. Oats push out more. If you try to push it in a 16 in. box, you would have to bruise them. If you make it just 2 in. wider, you will not injure your sheaf.

The next thing you do is just simply put on the ribbons—red, white and blue is what we use.

Now about preparing grain for showing: I have known some people to take three and four bags of grain and pick the large grains from it. I have never done that, because I think life is too short for that sort of thing. I will tell you the plan we have followed, and we have had pretty good success. When you have threshed take three or four bags, screen it well, at least three or four times, until you screen four bags down to perhaps 1¼ bag or 1½ bag. When you have done that you will have a very even sample. When you look at grain you want an even grain. There is one thing, however, you can't do by screening, and that is to take out deformed grains and highly colored grains. When you have screened it, let two persons sit down at a table, with a nice white paper on it, put the bag in the centre, each pour out a pile, and just pick out any deformed, split or highly colored grains, dropping them on the floor, and you will be astonished how quickly you can pick it.

REPORTS OF DISTRICT DIRECTORS.

District No. 1.

J. E. MONTGOMERY, South Mountain, Director: The wet weather of last autumn was a big drawback to many of the fall fairs in my district, but on the whole the attendance and exhibits were about the average, showing that a deep interest is being taken by the farmers in agricultural exhibitions. The wet weather on fair days should be a strong incentive for all Societies to become affiliated with the Ontario Fall Fairs Association, for the weather insurance benefits alone.

There are two or three exhibitions in this district which are apparently on the downward grade and we believe a little encouragement from the Department would be a wonderful help to bring them back to the prosperity of former years.

The exhibits in the various stock classes in this district are worthy of mention as regards numbers and quality, and considerable improvement was noted in the field crops, such as roots and vegetables, grain and seeds. This is no doubt being occasioned by the favorable crops in the district.

Ladies' work forms a particularly interesting exhibit, and should be encouraged by every Board in this district, as it forms a very important attraction for the ladies who attend our exhibitions.

The Field Crop Competition is becoming one of the most popular features of Agricultural Societies in this district and the benefits are being recognized more and more as they progress.

The school fairs of this district still continue to grow bigger and better than ever, and some keen competitions, are enjoyed by the parents as well as the scholars. Probably Dundas County has the equal of any school fair in the Province of Ontario.

Taken altogether, the agricultural fall fairs are a great stimulant to agriculture, and every means should be taken to create new ideas and interest and thus help in the reconstruction period through which our country is now passing, besides giving our agriculturists an added zest to their success.

District No. 2.

J. L. F. **Sproule**, Westbrook, Director: For various reasons I have been unable to get in touch personally with all the Societies, but I find upon inquiry that the enthusiasm of the members of the various Associations is as great as ever.

The Directors of Cobden Agricultural Society specially invited me to visit them on their Annual Sports Day. Owing to my farm duties at that particular time and my inability to secure efficient help, owing to war conditions, I was unable to avail myself of their hospitality.

Their railway connections which would necessitate spending three days, was also another factor preventing this visit. I am making this explanation here that they may not think I was lacking in appreciation of their kindness.

The heavy rains at the usual Fair dates was very unfortunate for the success of many of the fairs, accounting for the large falling off in attendance and exhibits of many of them.

Percheron.

The outstanding feature of this district is the unprecedented success of the Kingston Industrial Exhibition due largely to the unremitting energy of the manager, Mr. R. J. Bushell.

The 1918 Fair was far and away ahead of any previous exhibition both in quantity and quality of the exhibits and in the interest taken by manufacturers and dealers in the fair as an advertising medium.

I would further say that the Agricultural Societies should take every means to encourage the rural school fairs, for upon the boys and girls of to-day depends the future success of agriculture and agricultural fairs and the prosperity of the agriculturists of this fair Province in the years to come.

District No. 3.

W. J. **Barber**, Rossmore, Director: District No. 3 comprises the Counties of Hastings, Lennox and Addington, Northumberland, and Prince Edward, noted for fruit raising and dairying.

There are in this district twenty-six Agricultural Societies, but on account of the shortage of farm labor it was impossible for me to attend as many of them as I otherwise would have. However, I visited eight and found them all doing good work.

The unfavorable weather conditions at the time of holding most of the fairs in the district resulted in the gate receipts being in most cases much smaller than previous years; however, these Societies were helped out by the Department with the Wet Weather Insurance and were able to pay their prizes in full.

Field Crop Competitions were conducted by a number of the Societies; nearly all holding two competitions and there is nothing that tends to greater production, cleaner farming, and a better quality of grain: and I would suggest that those Societies that have not yet entered the Field Crop Competition do so this year, if possible, as it is of great educational value along this line.

School fairs are conducted by the District Representatives and the interest shown by the children, teachers and parents, is very encouraging.

At some of the large fairs the Government gave an exhibit in miniature of the conditions and appliances on the farm: these demonstrations I have no doubt have done a lot of good and should be continued.

The live stock departments were fairly well filled, the horses as usual being the chief attraction although there was great interest taken in the cattle exhibit.

The poultry departments were fairly well filled and are becoming more attractive each year.

The ladies' work and the plants and flower exhibit were well up to previous years.

On account of the poor fruit crop in this district the classes were not so well filled nor was the quality as good as last year.

Nearly all the Societies in this district employ two or more Departmental Judges, and they have all or nearly all, given good satisfaction.

A few of the Societies elect lady directors, and I think this is a move in the right direction, for the time is coming in the very near future when the ladies will take their places along with the men in the upbuilding of agriculture and in the general welfare of the country. We have in Picton Fair one of the best in the district: one that is a credit to the County of Prince Edward and to the Board of Directors that manage it, and especially to the energetic Secretary-Treasurer, Mr. A. P. MacVannel, who has through his efforts been able to secure the co-operation of the citizens of Picton and the people of the surrounding county, and this, I believe, is necessary for a successful fall fair. I would suggest that as many members as possible of the different Fair Boards in the district attend this fair, for they will get pointers there that if acted upon will go a long way towards improving the majority of the fairs in the district.

There seems to be quite a difference of opinion regarding attractions at our fairs, but I am of the opinion that in order to get a crowd and hold them we must have some attraction, especially good music and speeding in the ring, although some people object to the latter.

In conclusion, I wish to thank the officers and directors throughout the district for the kindness extended to me during my term of office and trust the year 1919 will be a banner year.

District No. 4.

W. Hickson, Bobcaygeon, Director: There were twenty-one fall fairs held in this district in 1918. As I am Secretary of Verulam Fair and our dates, September 25th and 26th, were right in the middle of the busy fair season, it rendered it impossible for me to attend even one-third of these fairs. However, I attended six out of these twenty-one fall fairs, and was very kindly received by their officers. In some cases, I was asked to do some judging in departments of their exhibits, which I understood quite well, and trust I was of service to them in that capacity. I noticed a marked difference among the six fairs I had the privilege of attending. Some of them had large "howling" midways, which seemed an indispensable adjunct, to draw the crowd to these fairs, while others had no midways, but had educative features, such as nicely decorated processions, skilled lady and gentlemen horseback riders, songs by school children, and drawing contests. The fairs with the educative features were quite as well attended as the others, but were interesting their spectators from an altogether different standpoint.

The Field Crop Competitions held the distinguished place they deserve at five out of the six fall fairs I attended. This excellent agricultural work. is growing steadily throughout this district. The $75 grant by the Department caused a number of Societies to compete in spring wheat this past season, and thereby helped to increase wheat production. Wet weather interfered with several fairs in the district, but, in spite of this, the exhibits in the different departments were good in all the fairs I attended. At most of these fairs, the floral exhibits, the fine art exhibits, children's exhibits and the exhibits in ladies' work showed not only great interest but marked skill in these departments. I addressed the Directors of South Victoria Agricultural Society on the "Benefit of the Field Crop Competitions," and wrote, at request, Port Hope and Hamilton, on "How to Conduct a Seed Fair," and I also sent our Seed Fair prize lists and programme to them.

In closing I wish to thank the officers and directors for the courteous way I was treated on these visits, and I rejoice to be able to say the great war cloud of the terrible world conflict has passed away and we are on the eve of getting a lasting peace, so that a new era will dawn on the world.

District No. 5.

R. B. HENRY, Orangeville, Director: This district comprises the Counties of Dufferin, Halton, Peel, Simcoe, and York.

I had the pleasure of visiting eight fairs, spending two days at The National Exhibition. While there, I visited almost every department and was surprised, owing to war conditions, to see the splendid exhibits and large attendance. One of the chief attractions was the Live Stock Parade. Why not a parade at all fairs? Some of the fairs in Dufferin adopted this which not only proved attractive but beneficial to exhibitors as well.

I would urge upon officers and directors the advantage of visiting other fairs and observing their methods. Information gained in this way would be of service to them in conducting their own fair.

I must compliment the fairs I have attended in this district on the success they have had in their work. There was evidence everywhere of advancement.

The Live Stock Department was well filled; the horses, as usual, were the chief attraction; entries large in cattle and sheep; prizes offered for hogs do not warrant a large exhibit in this class.

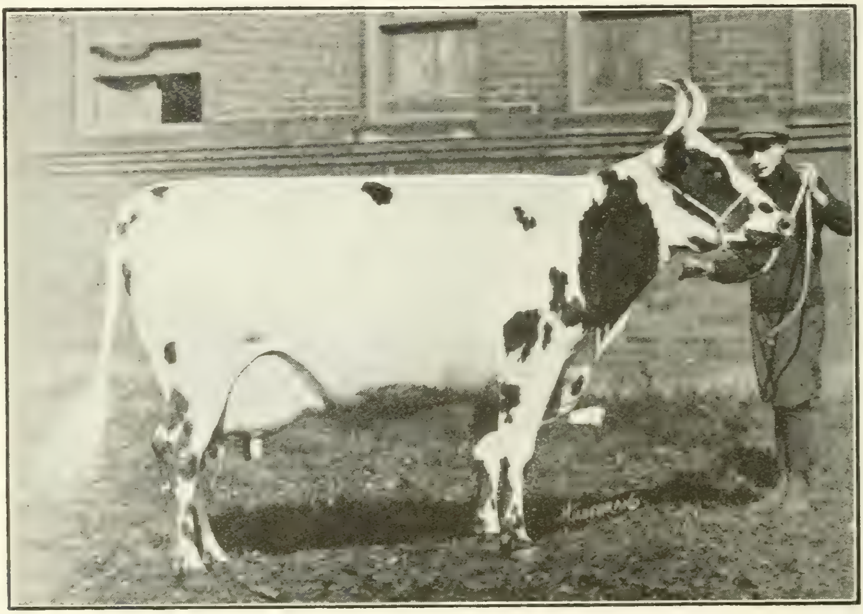
The ladies' work was well represented. It is an important feature and should be encouraged.

The Field Competition in the district is doing a good work. This, I believe, is the greatest asset the Agricultural Societies have. All fairs should take advantage of these competitions.

The fairs in the district employing department judges find, on the whole, that they give general satisfaction.

Before closing my report I especially wish to thank our efficient superintendent for his visit to Dufferin Fair last fall. He opened the fair with an excellent address, which was both edifying and instructive which was appreciated by all. To Mr. Wilson we attribute a share of the success of our fair, which was one of the best ever held in Dufferin.

I wish also to thank the officers and directors throughout the district for their kindness to me during my term of office.



A Prize Ayrshire.

District No. 6.

F. W. Ramsey, Dunnville, Director: I am proud to say that we represent a portion of an Empire, and of that sturdy class of that Empire known as the Ontario Agriculturists, who have shown their patriotism not only in the farmer boys who have offered and sacrificed themselves in distant parts of our Empire, but in the farm boys who labored at home and by their efforts and patriotism in production, have increased Ontario farm products by over twenty-five per cent., thereby not only saving the financial credit of Ontario, but also improving the credit of the Empire.

Those of you who follow the Beef and Dairy Contests through the Province will remember that a large percentage of the winners are from this district. I visited a number of fairs during the past season and notice progressiveness all along this line. While there was a drop in the horse department this was overbalanced in most cases by the increase in cattle entries, due, no doubt, to the horse market being somewhat quieter than heretofore.

One of the most pleasant ways of learning is to attend fairs and exhibitions. You can read as much as you like, but observation is the best teacher.

The conflicting of dates of exhibitions has again caused considerable trouble, and I do not see how there can be a change for the better until the Department of Agriculture insists that the date of each fair be registered, and no change made without authority.

I am very pleased to state that a large number of fairs in our section have awarded substantial prizes for the school fair exhibits grown from products supplied by the Department of Agriculture, which has caused considerable excitement, and the rural schools are taking great interest along agricultural lines.

Where land is not obtainable at the school the children have their lots at home and it is not an uncommon thing when driving along the road to see small plots of grain and roots sown and cared for by the children. This educates the small boy to have good clean seed and to take an interest in farming and thus having a tendency to keep him there.

Several school fairs have been held during the past year where only exhibits cared for by the children are exhibited, which have caused a great deal of excitement and the children are taking an active interest in them, much to the credit of the Department of Agriculture. I think it would be a very great thing if we could have the two fairs held on the same day.

The agricultural industry is fast coming to the top and you will see in ten years from now that there will not be the trouble to keep the boy and girl on the farm, because farming will be looked upon as one of the very best occupations that either man or woman could be employed in.

District No. 8.

AMOS DOUPE, Kirkton, Director: District No. 8 comprises the Counties of Huron, Perth, Middlesex, and Elgin, in which there are 38 Agricultural Societies. I visited as many Fairs as I possibly could, and would have liked to have visited a number more but could not do so on account of the scarcity of help and a number of the Fairs were held on the same day which could not be avoided. The Societies that were fortunate in having fine weather on Fair days had very successful exhibitions.

At most of the Fairs I attended I found the officers active and energetic, courteous and obliging.

The horse ring is certainly the centre of attraction, and if some societies were to increase the prizes in horses, a larger number would be on exhibition. Some societies have seats placed around the horse ring and also in different parts of the ground which is a move in the right direction and was highly appreciated by the visitors.

Some splendid cattle were on exhibition fit for any show ring in the Province, and as a rule the classes were well filled.

There was not the competition in hogs there should be; larger prizes would induce the breeders to bring their hogs to the Fairs.

The roots at some of the Fairs were very large and of good quality, while at other Fairs they were not up to the average, due to the long spell of dry weather in that section.

There was a splendid display of apples of No. 1 quality, and if some societies would furnish plates for the exhibition of fruit, a much nicer display could be made.

The School Fairs when held in connection with the Fall Fairs are fast coming into favor and should be encouraged. When you get the children interested, you get the parents also.

Some societies offered prizes for foot races for the children and also adults, and why not? I would rather see a foot race on the square any day than a crooked horse race. I always like to see a prize won on its merits, and that is not always the case in the speeding events at the local Fairs.

Megaphones should be more extensively used than they are—it assists very much the director who has charge of the horse ring when calling in the different classes of horses, as it can be heard all over the ground.

I cannot understand why more societies do not enter in the Field Crop competitions. Is it because there is some difficulty in persuading the farmers to enter in those competitions? A farmer will spend a great deal of time in fitting a colt for a three or four dollar prize offered at the Fall Fair, and why not spend a little time on five acres of grain when the first prize is $20?

I am very sorry to state that the Huron County Council gave no grants to the Agricultural Societies in 1918, which is a move in the wrong direction, and I sincerely trust that the members of the County Council will in future continue those grants as formerly.

I would like to see every Society in the Province send delegates to the Toronto Convention. If you cannot send delegates, send that affiliation fee. There is scarcely one society in the Province I might say that has not in some way benefited by this association. Wet weather insurance, increased grants, Field Crop competitions, were all inaugurated by this Association. This Association received no help from the Government financially. All that keeps it up is the affiliation fee received from the societies.

A district meeting was held in London on the 30th of January. A number of delegates were present and gave short addresses.

In conclusion I wish to thank the officers of the Fair Boards for the kindness and courtesy shown me while attending the Fall Fairs and hope the same kindness will be extended to my successor in office.

Now since the war is over and our boys are returning from the battlefields, I hope the Societies in this fair Province of Ontario will have the best Fairs in 1919 they have ever had.

District No. 11.

T. Rowland Hill, Hillside, Director: Muskoka, Parry Sound and Haliburton have respectively eight, thirteen and three Agricultural Societies. These twenty-four fairs are scattered over a large territory and it is impossible to attend more than a few of them in one year. The exhibits of roots, grain and vegetables at the Fairs which I attended and those from which I received reports were on the whole very good. The records of the Canadian National and the Guelph Winter Fair show what Muskoka can produce in the way of potatoes, although we have too many varieties when considered from a commercial standpoint. Wheat did well in Muskoka last year and splendid samples were shown at some of the fairs. The interest in the Standing Field Crop Competitions is growing resulting in the improvement of crops generally.

While the Live Stock exhibits at our fairs are on the whole not as well bred and finished as at some of the Fairs in the older part of Ontario, yet the classes are possibly becoming stronger and more care is being taken in preparing animals for the show ring. At some of the Fairs Educational exhibits were shown by the Dominion Department of Agriculture, and I consider that such exhibits should be shown at every fair in the District.

The Rural School Fairs are helping the Societies' Fairs by educating the boys and girls to prepare produce and live stock for exhibition. In connection with the work of the Agricultural Representative I think the field covered by the Huntsville office is too great, and that the Department should have one Representative for Muskoka and another for Parry Sound District. More School Fairs could then be organized, better service given the farmers and more effective work done in general; all of which would benefit our Agriculture and incidently our Agricultural Societies.

As it has been almost impossible to have good meetings of the District Fairs Association it has been suggested by the Secretary of the South Muskoka Society that the District meeting should be held at Toronto before or after some of the sessions of the Societies' Convention.

Berkshire Sow, bred by W. W. Brownridge.

District No. 12 (Eastern Division).

E. F. Stephenson, New Liskeard, Director: The people of the Eastern portion of Northern Ontario experienced a very unfavorable season for crop saving during August, September and October last, owing to the wet weather. The result was such as to react unfavorably in regard to the exhibit of cereals at the annual fall fairs. Farmers could not possibly save their grain and have the threshing done in time for the fairs, so that the showing of grain was small and the quality not as good as formerly. The exhibits of roots and vegetables, however, were as good as usual.

In the earlier days the fairs in the newer parts of the Province have been of interest chiefly on account of the products from the farm and garden. Those who came to this part of the country were anxious to see the exhibits and to be assured that this Northland could produce all kinds of foodstuffs. This country, however, has long since passed beyond the experimental stages and now more attention is given in the prize lists to farm stock.

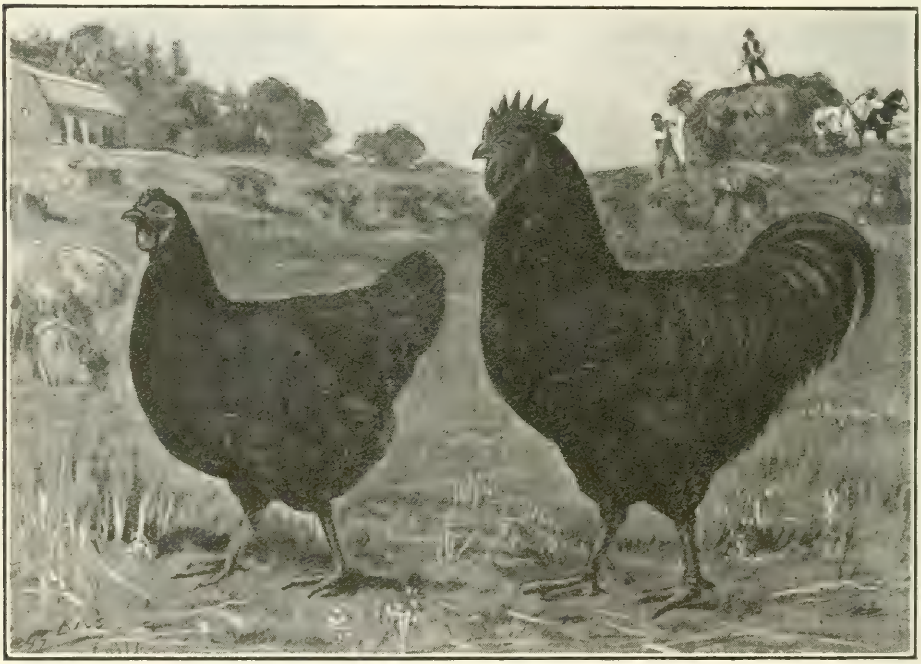
So far as I was able to learn—for I was not able to visit all the fairs in my division owing to their being widely separated—they on the whole were up to the average in entries made, competition and gate receipts.

The Children's Fairs under the auspices of the Agricultural Societies are now held on the same day and at the same place.

Also now most of the Societies have ladies on the board of directors, with most satisfactory results.

Each winter during the past five years Englehart Agricultural Society has held very successful Poultry Fairs. Expert judges have been employed, substantial prizes given, and the competition is keen enough to make successful ones proud of the birds they sent to the show.

Last spring the New Liskeard Society held a Spring Seed Fair, and it was so successful that this Society has decided to hold a Fair of this kind annually.



Rhode Island Reds.

Prizes were offered for all kinds of seed grain and seed grown by farmers. Prizes were also offered for two kinds of standard potatoes. The competition was keen. In spring wheat there were upwards of 20 entries with as many more in oats. In every class there were entries. Dr. Zavitz was the Judge and at the evening meeting, in the course of a splendid talk he stated his reasons for the awards given by him, to the great edification of the exhibitors.

The fair lasted two days during which time a short course was given in agriculture, the lecturers being Dr. Zavitz, of the Agricultural College, Guelph; W. G. Nixon, B.S.A., of Temiskaming; W. J. Bell, Principal of Kemptville School of Agriculture; A. H. McLennan, Provincial Vegetable Specialist; L. A. Zufelt, Supt. Eastern Dairy School, Kingston.

District 12 (Western Division).

JAMES TONKIN, Fort William, Director: I visited several Fairs in our District during 1918 which were well conducted. I drove to Hymers, about 30 miles from here, and found that the Fair there was very successful. They had a large number of horses and cattle and the display of vegetables was also very good, but on account of the shortage of help brought on by the war it was very difficult for the farmer to get in his exhibit.

I visited Oliver Township Fair, which is about 18 miles from here. They had a good Fair with a splendid attendance. The exhibits of stock and horses was not quite as large as in some years, but this also was on account of the shortage of labor which I think will be overcome now that the war is over and things are getting back to their normal condition again. They held the School Fairs in conjunction with their Fair which proved a great success. A very large number of visitors from these two cities went out. There must have been one hundred automobiles on the ground and everything went along successfully.

We held the West Algoma Fair for three days, but on account of the very cold weather we did not have such good attendance as we have had in past years. We also held the School Fair in conjunction with this Fair which saved the School Board a lot of extra expense. Their exhibition was a very good one indeed and was a great credit to the children of the Schools. This year we intend to offer special prizes for the School exhibits so that the School Boards will be encouraged to get their exhibits on the grounds and have them judged by the Government Judges. I feel that if we want good farmers it is our duty to start and encourage the young and give them all the help we can to keep their minds on the farming part of Ontario, as we have the Banner Province of the Dominion. We have also decided to put up prizes this year for Manual Training, which will be encouraging to the young boys of the High School.

We also had a splendid exhibit sent up by the Dominion Government for which we have to thank Mr. W. A. Lang, the Government Representative. This was a very good exhibit and very instructive to the farmer in general, showing what can be done if attended to in this country.

The Industrial Farm and Plant Breeding Station situated here also sent in a very fine exhibit of stock and vegetables and horticulture, which made a grand showing and was certainly a very great credit to this part of the country.

Our Ladies have taken a very active part in a number of ways these last two years to help the Fairs along.

I found it a very difficult matter to visit Kenora Fair, as it is three hundred miles away from the Head of the Lakes. However, our Vice-President was up there judging and I sent a letter of introduction to the President of that Fair. He reported that the Management of the Fair was very good and conducted in a business-like manner and the Directors were trying to do everything possible to improve the Fair and to make it a greater success.

Re Rainy River Fair. Mr. McKenzie attended that also and said that their Fair was a decided success. I sent them letters asking them to try to hold their School Fairs along with their Annual Fair which would help to make a greater success of it and also encourage the young to help it along in the right way.

District No. 12 (Central Section).

WM. MARSHALL, Sault Ste. Marie, Director: This district is practically divided into three sections, namely: Manitoulin Island, the North Shore from Sudbury to Sault Ste. Marie and St. Joseph's Island.

Last year Manitoulin was favored by one of the largest crops that were ever known on the Island, and it would naturally follow that the fairs would be the best, but on account of the very heavy crops, and the scarcity of help, they suffered to a certain extent, but on the whole, showed a marked improvement to previous years. The farmers are making great strides in live stock and exhibits along those lines, which were certainly a credit to the Island. The number of hogs, sheep, cattle and horses exhibited was a credit to Ontario. We are pleased to report that the Ontario Representative, Mr. I. F. Metcalf, by his untiring efforts, is doing splendid work among the farmers.

Along the North Shore, generally speaking, the fairs showed a marked improvement over former years, although they all suffered through a shortage of farm help, and some of them were very unfortunate on account of rainy weather.

The Indian fair on the Garden River Reserve which was organized in 1907 showed a marked improvement over last year and is doing a good work as to teaching and encouraging our red brother the arts of agriculture. Our Indian agent, Mr. A. D. McNabb, deserves special mention for the way he has taught the Indians on the Reserve how to farm.

The fair on St. Joseph's Island held at Richard's Landing, was a decided success, and the showing of fruit would do credit to the Canadian National Exhibition. The people are greatly handicapped by not having a bridge on which they can cross to the mainland, but we are glad to say that there is a movement under way now by which this difficulty will be overcome.

Our rural school fairs through the district were a wonderful success and in several cases they out-classed the Fall Fairs.

Last, but not least, comes our fair at the Sault, and although the last day was very wet, the fair was the best on record both as to exhibits and crowds.

The last number of years, we have arranged the dates of all of the fairs, including school fairs to be held previous to the one held at the Sault, and in that way we try to make the Sault a centre whereby all exhibitors, who have taken prizes throughout the districts, can bring their exhibits up to the Sault and compete there. We try to have a good programme of sports arranged so that our visitors thoroughly enjoy themselves.

We think the Association should take up the matter of having some special exhibits or amusements, well advertised and distributed to all the smaller fairs through the district, as a great number of them seem to lack the life that they should have.

A few years ago, The Central Algoma Agricultural Society imported some registered Green Mountain seed potatoes and distributed them throughout the country. This last year the Department pronounced them to have the least disease of any in the province. Those pure seed potatoes are now being sold by some of our Farmers' Clubs by the car load. Any person wishing to procure any of them could do so by writing Mr. E. Noble, secretary of the Central Algoma Agricultural Society.

After singing of the National Anthem, the Convention then dispersed.

COMPARATIVE STATEMENT OF GRANTS TO AGRICULTURAL SOCIETIES, 1918-19.

Societies.	1918	1919
ALGOMA:		
Bruce Mines	$123 00	$162 00
Central Algoma	628 00	776 00
Iron Bridge	72 00	84 00
Johnston & Aberdeen	99 00	111 00
North Shore	119 00	139 00
St. Joseph Island	155 00	178 00
Thessalon	200 00	237 00
BRANT:		
Onondaga	126 00	145 00
Paris	360 00	420 00
South Brant	399 00	450 00
BRUCE:		
Arran and Tara	288 00	309 00
Carrick	228 00	254 00
Chesley	185 00	225 00
Eastnor	76 00	75 00
Hepworth	156 00	171 00
Huron Township	187 00	206 00
Kincardine	129 00	153 00
Lucknow	207 00	234 00
N. Bruce & Saugeen	174 00	196 00
Northern	....	....
Paisley	225 00	246 00
Pinkerton	89 00	100 00
Teeswater	226 00	266 00
Tiverton	115 00	135 00
Underwood	121 00	135 00
Wiarton	162 00	195 00
CARLETON:		
Carleton County	363 00	356 00
Carp	270 00	325 00
Fitzroy	160 00	200 00
Metcalfe	241 00	290 00
DUFFERIN:		
Dufferin	259 00	322 00
Dufferin Central	282 00	336 00
East Luther	265 00	307 00
DUNDAS:		
Dundas	79 00	78 00
Mountain	186 00	206 00
Winchester	273 00	292 00
DURHAM:		
Cartwright	130 00	143 00
Clarke Township	275 00	327 00
Millbrook	314 00	339 00
Port Hope	391 00	410 00
West Durham	418 00	482 00
ELGIN:		
Aldborough	210 00	227 00
Aylmer & E. Elgin	300 00	300 00
Shedden	73 00	95 00
South Dorchester	184 00	197 00
Straffordville	90 00	104 00
West Elgin	296 00	337 00

Societies.	1918	1919
ESSEX:		
Amherstburg, Anderdon & Malden	214 00	233 00
Colchester South	194 00	225 00
Comber	159 00	158 00
Essex Co.	505 00	545 00
Mersea, Leamington & S. Gosfield	432 00	473 00
Windsor	710 00	800 00
FRONTENAC:		
Frontenac	115 00	113 00
Kennebec	43 00	52 00
Kingston Industrial	398 00	584 00
Parham	83 00	96 00
Storrington	75 00	79 00
Wolfe Island	99 00	110 00
GLENGARRY:		
Glengarry	187 00	218 00
Kenyon	143 00	153 00
St. Lawrence Valley	286 00	316 00
GRENVILLE:		
Kemptville	166 00	161 00
Merrickville	169 00	168 00
South Grenville	194 00	....
Spencerville	132 00	159 00
GREY:		
Ayton	118 00	124 00
Collingwood Tp.	119 00	147 00
Desboro	180 00	211 00
East Grey	111 00	126 00
Egremont	145 00	160 00
Hanover, Bentinck & Brant	131 00	164 00
Holland	145 00	179 00
Keppel	87 00	109 00
Kilsyth	221 00	245 00
Markdale	207 00	228 00
Meaford & St. Vincent	216 00	262 00
Normanby	93 00	92 00
Osprey	129 00	141 00
Owen Sound	341 00	404 00
Priceville	93 00	109 00
Proton	225 00	254 00
Rocklyn	170 00	204 00
South Grey	158 00	164 00
Sydenham	98 00	121 00
Walter's Falls	149 00	180 00
HALDIMAND:		
Caledonia	518 00	578 00
Canboro	56 00	63 00
Dunnville	152 00	158 00
Haldimand	199 00	226 00
Southern Branch	113 00	120 00
Walpole	181 00	193 00
HALIBURTON:		
Glamorgan	37 00	47 00
Haliburton	194 00	210 00
Minden	192 00	217 00

COMPARATIVE STATEMENT OF GRANTS TO AGRICULTURAL SOCIETIES, 1918-19.—*Continued.*

Societies.	1918	1919
HALTON:		
Acton	211 00	262 00
Esquesing	244 00	262 00
Halton	382 00	430 00
Nelson & Burlington	232 00	279 00
Trafalgar	338 00	575 00
HASTINGS:		
Bancroft	137 00	146 00
Belleville	342 00	347 00
Frankford	243 00	258 00
Madoc	269 00	303 00
Marmora	112 00	168 00
Maynooth	58 00	63 00
Shannonville	141 00	150 00
Stirling	176 00	194 00
Tweed	198 00	222 00
Wollaston	94 00	127 00
HURON:		
Bayfield	102 00	119 00
Blyth	120 00	139 00
Dungannon	124 00	137 00
East Huron	198 00	226 00
Exeter	210 00	239 00
Goderich Industrial	232 00	255 00
Howick	147 00	189 00
Seaforth	197 00	207 00
South Huron (Spring fair only)	....	....
Turnberry	166 00	200 00
Zurich	128 00	149 00
KENORA:		
Dryden	253 00	272 00
Kenora	428 00	496 00
KENT:		
Camden	124 00	138 00
East Kent	238 00	249 00
Harwich	194 00	224 00
Howard	324 00	399 00
Orford	243 00	282 00
Raleigh & Tilbury	133 00	167 00
Romney & Wheatley	126 00	140 00
Wallaceburg	120 00	140 00
West Kent	310 00	320 00
LAMBTON:		
Bosanquet	175 00	184 00
Brooke & Alvinston	266 00	322 00
East Lambton	245 00	286 00
Florence	161 00	189 00
Forest	223 00	247 00
Moore	241 00	289 00
Petrolia & Enniskillen	354 00	390 00
Plympton & Wyoming	163 00	201 00
Sombra	107 00	125 00
West Lambton	355 00	437 00
LANARK:		
Dalhousie	99 00	105 00
Lanark Tp.	121 00	131 00
Lanark Village and Bathurst	170 00	171 00
Maberly	68 00	76 00
North Lanark	449 00	453 00
Pakenham	165 00	187 00
South Lanark	314 00	347 00
LEEDS:		
Brockville	383 00	....
Delta	188 00	193 00
Frankville	178 00	181 00
Lansdowne	160 00	189 00
Lombardy	147 00	158 00
LENNOX AND ADDINGTON:		
Amherst Island	140 00	140 00
Centreville	83 00	103 00
Ernestown	109 00	132 00
Lennox	....	300 00
LINCOLN:		
Abingdon	65 00	81 00
Clinton	213 00	258 00
Monck	99 00	94 00
Niagara Town & Tp.	....	83 00
Peninsular Central	67 00	106 00
MANITOULIN ISLAND:		
Billings	206 00	252 00
Gore Bay	362 00	385 00
Howland	131 00	173 00
Manitowaning	213 00	252 00
Providence Bay	184 00	234 00
MIDDLESEX:		
Caradoc	137 00	158 00
Delaware	172 00	213 00
Dorchester	220 00	236 00
East Middlesex	100 00	100 00
London Tp.	106 00	133 00
McGillivray	55 00	66 00
Melbourne	216 00	259 00
Mosa and Ekfrid	214 00	236 00
North Middlesex	118 00	135 00
Parkhill	138 00	157 00
Strathroy	467 00	552 00
Thorndale	117 00	136 00
Westminster	122 00	156 00
MUSKOKA:		
Baysville	143 00	164 00
Gravenhurst and Muskoka	329 00	337 00
Medora and Wood	277 00	327 00
Morrison	105 00	106 00
North Muskoka	359 00	424 00
South Muskoka	768 00	800 00
Stephenson & Watt	343 00	377 00
Stisted	152 00	171 00
NIPISSING:		
Astorville	108 00	111 00
Bonfield	134 00	144 00
East Nipissing	251 00	286 00
North Bay	....	208 00
Sturgeon Falls	328 00	433 00
Verner	323 00	389 00

COMPARATIVE STATEMENT OF GRANTS TO AGRICULTURAL SOCIETIES, 1918-19.—*Continued.*

Societies.	1918	1919
NORFOLK:		
Charlotteville	134 00	146 00
Courtland	106 00	122 00
Houghton	114 00	131 00
Norfolk County	542 00	618 00
North Walsingham	108 00	121 00
Townsend	74 00	85 00
Windham	103 00	122 00
NORTHUMBERLAND:		
Alnwick	134 00	....
Brighton	263 00	278 00
Cobourg Central	250 00	....
Colborne	255 00	282 00
Cramahe	154 00	160 00
Percy Township	436 00	536 00
Seymour	216 00	269 00
Wooler	118 00	154 00
ONTARIO:		
Beaverton	172 00	227 00
Brock	195 00	210 00
Pt. Perry, Reach and Scugog	196 00	253 00
Ramona	41 00	40 00
Scott	115 00	137 00
South Ontario	488 00	591 00
Uxbridge	193 00	203 00
OXFORD:		
Drumbo	299 00	344 00
East Nissouri	123 00	150 00
Ingersoll, N. and W. Oxford	158 00	181 00
North Norwich	212 00	235 00
South Norwich	133 00	139 00
Tavistock	233 00	289 00
Tillsonburg and Dereham	198 00	267 00
West Zorra & Embro.	187 00	214 00
Woodstock	460 00	525 00
PARRY SOUND:		
Armour, Ryerson and B. Falls	519 00	557 00
Christie	215 00	286 00
Loring	194 00	228 00
Machar	191 00	211 00
Magnetawan	260 00	282 00
McKellar	409 00	469 00
McMurrich	272 00	292 00
Parry Sound	461 00	537 00
Perry	341 00	375 00
Powassan	351 00	357 00
Rosseau	289 00	390 00
Strong	283 00	323 00
United Tps.	223 00	273 00
PEEL:		
Albion and Bolton	269 00	306 00
Caledon	134 00	166 00
Cooksville	254 00	301 00
Peel	445 00	499 00
Toronto Gore (Spring Fair only)	....	....
Toronto Tp.	293 00	293 00

Societies.	1918	1919
PERTH:		
Elma	108 00	125 00
Fullarton, Logan and Hibbert	275 00	331 00
Kirkton	185 00	215 00
Listowel	146 00	160 00
Mornington	177 00	213 00
South Perth	213 00	228 00
Stratford	366 00	456 00
PETERBOROUGH:		
East Peterborough	405 00	470 00
Galway	49 00	59 00
Lakefield	132 00	160 00
Otonabee	140 00	153 00
Peterboro Industrial	682 00	790 00
PRESCOTT:		
Alfred	116 00	137 00
South Plantagenet	117 00	133 00
Vankleek Hill	339 00	395 00
PRINCE EDWARD:		
Ameliasburg	172 00	206 00
Prince Edward	576 00	700 00
Sophiasburg	126 00	132 00
RAINY RIVER:		
Atwood	423 00	468 00
Rainy River Valley	552 00	608 00
RENFREW:		
Arnprior	286 00	359 00
Cobden	230 00	261 00
North Renfrew	359 00	421 00
Renfrew	619 00	694 00
RUSSELL:		
Casselman	56 00	45 00
Clarence	87 00	99 00
Russell	231 00	229 00
SIMCOE:		
Alliston	162 00	186 00
Barrie	377 00	441 00
Beeton	158 00	162 00
Bradford and W. Gwillimbury	166 00	181 00
Coldwater	146 00	167 00
Cookstown	178 00	203 00
East Simcoe	....	300 00
Flos Tp.	165 00	194 00
Nottawasaga and G. Northern	232 00	284 00
Oro	183 00	209 00
Tiny and Tay	134 00	159 00
STORMONT:		
Cornwall	306 00	329 00
Finch	73 00	75 00
Roxborough	193 00	246 00
Stormont	142 00	164 00

COMPARATIVE STATEMENT OF GRANTS TO AGRICULTURAL SOCIETIES, 1918-19.—*Continued.*

Societies.	1918	1919
SUDBURY:		
Chelmsford	86 00	205 00
Martland & Cosby	82 00	117 00
Massey	260 00	296 00
Warren	196 00	242 00
TEMISKAMING:		
Charlton	210 00	250 00
Cochrane	176 00	187 00
Englehart	246 00	327 00
Matheson	104 00	86 00
New Liskeard	431 00	456 00
Porquis Jct.	47 00	58 00
THUNDER BAY:		
Oliver	315 00	364 00
West Algoma	800 00	800 00
Whitefish Valley	165 00	185 00
VICTORIA:		
Eldon	117 00	129 00
Fenelon	152 00	174 00
Mariposa	107 00	110 00
South Victoria	793 00	800 00
Verulam	261 00	298 00
WATERLOO:		
Elmira and Woolwich	147 00	174 00
South Waterloo	464 00	548 00
Wellesley and North Easthope	190 00	221 00
Wilmot	242 00	300 00
WELLAND:		
Bertie	141 00	146 00
Fenwick	279 00	321 00
Stamford and Niagara Falls	78 00	....
Thorold Town and Tp.	137 00	161 00
Wainfleet	88 00	101 00
Welland	415 00	475 00
WELLINGTON:		
Arthur	217 00	255 00
Centre Wellington	325 00	376 00
Erin	291 00	310 00
Guelph and South Wellington	....	....
Mount Forest	297 00	339 00
Palmerston	122 00	147 00
Peel and Drayton	138 00	169 00
Puslinch	159 00	177 00
Rockwood	199 00	234 00
West Wellington	125 00	158 00
WENTWORTH:		
Ancaster	215 00	248 00
Binbrook	79 00	121 00
Hamilton and Wentworth	....	....
Rockton	328 00	360 00
Waterdown	164 00	191 00
West Flamboro	120 00	138 00
YORK:		
Markham & E. York	688 00	721 00
Newmarket	401 00	451 00
Queensville	110 00	....
Richmond Hill	201 00	244 00
Scarboro	329 00	360 00
Schomberg	196 00	222 00
Sutton	137 00	159 00
Weston, York and Etobicoke	230 00	264 00
Woodbridge	501 00	600 00
	$72,131 00	$82,383 00

SPECIAL GRANTS TO SOCIETIES IN THE DISTRICTS.

Societies.	1918	1919
ALGOMA:		
Bruce Mines	$52 00	$56 00
Central Algoma	100 00	100 00
Iron Bridge	30 00	29 00
Johnston & Aberdeen	42 00	38 00
North Shore	50 00	48 00
St. Joseph Island	65 00	61 00
Thessalon	84 00	82 00
FRONTENAC:		
Kennebec	37 00	36 00
Parham	70 00	66 00
HALIBURTON:		
Glamorgan	16 00	16 00
Haliburton	82 00	73 00
Minden	81 00	75 00
HASTINGS:		
Bancroft	100 00	100 00
Maynooth	49 00	44 00
Wollaston	80 00	88 00
KENORA:		
Dryden	100 00	94 00
Kenora	100 00	100 00
MANITOULIN:		
Billings	87 00	87 00
Gore Bay	100 00	100 00
Howland	55 00	60 00
Manitowaning	90 00	87 00
Providence Bay	77 00	81 00
MUSKOKA:		
Baysville	61 00	57 00
Gravenhurst and Muskoka	100 00	100 00
Medora and Wood	100 00	100 00
Morrison	44 00	36 00
North Muskoka	100 00	100 00
South Muskoka	100 00	100 00
Stephenson & Watt.	100 00	100 00
Stisted	64 00	59 00

SPECIAL GRANTS TO SOCIETIES IN THE DISTRICTS.—*Continued.*

Societies.	1918	1919
NIPISSING:		
Astorville	57 00	38 00
Bonfield	57 00	50 00
East Nipissing	100 00	99 00
Sturgeon Falls	100 00	100 00
Verner	100 00	100 00
PARRY SOUND:		
Armour, Ryerson and Burk's Falls	100 00	100 00
Christie	91 00	99 00
Loring	82 00	79 00
Machar	80 00	73 00
Magnetawan	100 00	98 00
McKellar	100 00	100 00
McMurrich	100 00	100 00
Parry Sound	100 00	100 00
Perry	100 00	100 00
Powassan	100 00	100 00
Rosseau	100 00	100 00
Strong	100 00	100 00
United Tps.	94 00	95 00
Galway	42 00	41 00

Societies.	1918	1919
RAINY RIVER:		
Atwood	100 00	100 00
Rainy River Valley	100 00	100 00
SUDBURY:		
Chelmsford	....	77 00
Martland and Cosby	35 00	40 00
Massey	100 00	100 00
Warren	82 00	84 00
TEMISKAMING:		
Charlton	88 00	86 00
Cochrane	74 00	65 00
Englehart	100 00	100 00
Matheson	44 00	30 00
New Liskeard	100 00	100 00
Porquis Jct.	....	9 00
THUNDER BAY:		
Oliver	100 00	100 00
West Algoma	100 00	100 00
Whitefish Valley	70 00	64 00
	$5,000 00	$5,000 00

GRANTS TO SPRING FAIRS, 1919.

Stallion Shows, 1919, $474.00.

S. Lanark for 1918	$50 00
Millbrook	50 00
Wilmot	50 00
Wellesley & N. Easthope	50 00
Forest	48 00
Erin	50 00
Arthur	50 00
Peel Co.	50 00
E. Luther	50 00
Meaford & St. Vincent	26 00
	$474 00

Stallion and Bull Shows, 1919, $297.00.

Seaforth	$50 00
S. Huron	50 00
S. Perth	47 00
Fullarton, Logan and Hibbert	50 00
Paris	50 00
Toronto Gore	50 00
	$297 00

Bull Show, 1919.

Verner	$50 00

Seed Fairs, 1919, $211.00 .

Verulam	$21 00
Richmond Hill	24 00
Powassan	25 00
Rockwood	15 00
S. Huron	12 00
Verner	18 00
Puslinch	15 00
C. Wellington	23 00
Whitefish Valley	24 00
Wilmot	15 00
S. Waterloo	19 00
	$211 00

GRANTS TO SOCIETIES OWNING PURE-BRED STOCK, 1919.

Colchester, North	$220 00
Cottam	270 00
Drummond	70 00
Dummer and Douro	315 00
Emily	170 00
Kenora	50 00
Lakehurst	170 00
Oldcastle	385 00
Osgoode	225 00
S. Woodslee	710 00
Verulam	40 00
	$2,625 00

SPECIAL GRANTS.

	1918	1919
INDIAN SOCIETIES:		
Garden River	$50 00	$50 00
Six Nations	100 00	100 00
United Indian	100 00	100 00
	$250 00	$250 00

GRANTS TO THE CANADIAN NATIONAL, CENTRAL CANADA AND WESTERN FAIR.

	1918	1919
Canadian National	$2,500 00	$2,500 00
Central Canada	1,156 00	1,091 00
Western Fair	1,344 00	1,409 00
	$5,000 00	$5,000 00

LEGISLATIVE GRANTS TO AGRICULTURAL SOCIETIES WHICH HELD FIELD CROP COMPETITIONS IN 1918.

ALGOMA:	
Bruce Mines	$100 00
Central Algoma	100 00
North Shore	100 00
St. Joseph Island	100 00
Thessalon	100 00
BRANT:	
Onondaga	100 00
Paris	100 00
Six Nations	125 00
BRUCE:	
Carrick	125 00
Chesley	125 00
Eastnor	50 00
Hepworth	50 00
Huron Township	100 00
Lucknow	125 00
North Bruce & Saugeen	100 00
Pinkerton	50 00
Teeswater	100 00
Underwood	50 00
Wiarton	100 00
CARLETON:	
Carleton County	50 00
Carp	100 00
Fitzroy	125 00
Metcalfe	100 00
DUFFERIN:	
Dufferin	125 00
Dufferin Central	50 00
East Luther	125 00
DUNDAS:	
Mountain	125 00
Winchester	100 00
DURHAM:	
Cartwright	50 00
Clarke Township	125 00
Millbrook	50 00
Port Hope	75 00
West Durham	75 00
ELGIN:	
Aldboro	100 00
Straffordville	50 00
ESSEX:	
Amherstburg, Anderdon and Malden	100 00
Comber	50 00
Windsor and North Essex	100 00
FRONTENAC:	
Kingston Industrial	50 00
Wolfe Island	125 00
GLENGARRY:	
Kenyon	50 00
St. Lawrence Valley	50 00
GRENVILLE:	
Kemptville	125 00
Spencerville	50 00
GREY:	
Holland	100 00
Keppel	100 00
Kilsyth	100 00
Markdale	50 00
Meaford and St. Vincent	50 00
Normanby	50 00
Osprey	50 00
Priceville	50 00
Proton	100 00
Rocklyn	100 00
South Grey	100 00
Walter's Falls	125 00
HALDIMAND:	
Caledonia	100 00
Haldimand	50 00
Southern Branch	50 00
HALTON:	
Halton	100 00
Nelson and Burlington	100 00
HASTINGS:	
Frankford	100 00
Madoc	100 00
Maynooth	50 00
Stirling	100 00
Wollaston	100 00
HURON:	
Blyth	50 00
East Huron	50 00
Howick	125 00
Turnberry	125 00
Zurich	50 00
KENORA:	
Dryden	100 00
Kenora	100 00
KENT:	
Harwich	50 00
Orford	50 00
Raleigh and Tilbury	50 00
Wallaceburg	100 00
West Kent	50 00

LEGISLATIVE GRANTS TO AGRICULTURAL SOCIETIES WHICH HELD FIELD CROP COMPETITIONS IN 1918.—*Continued.*

LAMBTON:	
Brooke and Alvinston	100 00
East Lambton	50 00
Florence	100 00
Plympton and Wyoming	50 00
Sombra	100 00
LEEDS:	
Brockville	125 00
Lansdowne	125 00
Lombardy	50 00
LINCOLN:	
Clinton	100 00
Niagara Town and Tp.	50 00
MANITOULIN:	
Gore Bay	75 00
MIDDLESEX:	
Caradoc	100 00
East Middlesex	50 00
London Tp.	125 00
McGillivray	50 00
Melbourne	50 00
Mosa and Ekfrid	50 00
North Middlesex	50 00
Strathroy	100 00
United Indian	50 00
Westminster	50 00
MUSKOKA:	
Gravenhurst and Muskoka	125 00
Medora and Wood	100 00
North Muskoka	100 00
South Muskoka	100 00
Stephenson and Watt	100 00
NIPISSING:	
Bonfield	50 00
Verner	125 00
NORFOLK:	
Courtland	100 00
Norfolk County	50 00
North Walsingham	50 00
NORTHUMBERLAND:	
Brighton	75 00
Seymour	100 00
Wooler	100 00
ONTARIO:	
Beaverton	125 00
Scott	50 00
OXFORD:	
East Nissouri	100 00
South Norwich	50 00
Tillsonburg and Dereham	50 00
West Zorra and Embro	50 00
PARRY SOUND:	
Christie	100 00
Loring	50 00
Machar	93 00
Magnetawan	36 00
McKellar	100 00
McMurrich	100 00
Perry	100 00
Powassan	100 00
Rosseau	100 00
Strong	125 00
United Townships	100 00
PEEL:	
Peel	50 00
Toronto Township	50 00
PERTH:	
Fullarton, Logan and Hibbert	100 00
Kirkton	100 00
Stratford	125 00
PETERBOROUGH:	
East Peterborough	50 00
Otonabee	125 00
Peterborough Industrial	125 00
PRESCOTT:	
Alfred	125 00
PRINCE EDWARD:	
Ameliasburg	125 00
Prince Edward	125 00
Sophiasburg	50 00
RAINY RIVER:	
Atwood	100 00
Emo	125 00
RENFREW:	
Arnprior	125 00
Cobden	125 00
North Renfrew	125 00
Renfrew	125 00
SIMCOE:	
Barrie	125 00
Coldwater	125 00
Nottawasaga and G. Northern	125 00
TEMISKAMING:	
Charlton	100 00
Englehart	100 00
New Liskeard	125 00
THUNDER BAY:	
Oliver	125 00
Whitefish Valley	100 00
VICTORIA:	
Eldon	50 00
Emily	50 00
Fenelon	50 00
Verulam	125 00
WATERLOO:	
South Waterloo	100 00

LEGISLATIVE GRANTS TO AGRICULTURAL SOCIETIES WHICH HELD FIELD CROP COMPETITIONS IN 1918.—*Continued.*

WELLAND:	
Bertie	100 00
Fenwick	100 00
Welland	100 00
WELLINGTON:	
Arthur	50 00
Centre Wellington	125 00
Erin	100 00
Palmerston	50 00
Puslinch	100 00
Rockwood	125 00
West Wellington	75 00
WENTWORTH:	
Waterdown	100 00
West Flamboro	50 00
YORK:	
Markham	125 00
Richmond Hill	100 00
Scarboro	100 00
Woodbridge	125 00
	$15,554 00

GRANTS TO SOCIETIES WHICH SUFFERED LOSSES IN GATE RECEIPTS. THROUGH WET WEATHER.

BRUCE:	
Kincardine	$130 00
North Bruce and Saugeen	46 00
Pinkerton	24 00
CARLETON:	
Carleton County	249 00
Carp	64 00
Fitzroy	93 00
DUFFERIN:	
East Luther	164 00
DUNDAS:	
Mountain	251 00
DURHAM:	
West Durham	136 00
FRONTENAC:	
Frontenac	87 00
Wolfe Island	89 00
GLENGARRY:	
Kenyon	245 00
St. Lawrence Valley	300 00
GRENVILLE:	
Kemptville	58 00
GREY:	
Holland	135 00
Owen Sound	300 00
South Grey	88 00
Sydenham	16 00
HALDIMAND:	
Dunnville	275 00
Haldimand	89 00
HASTINGS:	
Belleville	300 00
Frankford	163 00
Madoc	217 00
Maynooth	27 00
Stirling	172 00
HURON:	
Goderich Industrial	130 00
Seaforth	185 00
Zurich	16 00
LAMBTON:	
Petrolia and Enniskillen	60 00
LANARK:	
Dalhousie	26 00
Lanark Village & Bathurst	102 00
LEEDS:	
Frankville	149 00
Lansdowne	195 00
LINCOLN:	
Monck	94 00
MIDDLESEX:	
Dorchester	133 00
MUSKOKA:	
South Muskoka	126 00
NORTHUMBERLAND:	
Brighton	129 00
Cramahe	104 00
ONTARIO:	
Brock	49 00
OXFORD:	
East Nissouri	23 00
PEEL:	
Cooksville	128 00
PERTH:	
Listowel	190 00
PETERBOROUGH:	
Otonabee	100 00
PRINCE EDWARD:	
Ameliasburg	100 00
RENFREW:	
Cobden	127 00
TEMISKAMING:	
New Liskeard	49 00
VICTORIA:	
Eldon	99 00
Verulam	11 00
WATERLOO:	
Wellesley and N. Easthope	58 00
Wilmot	89 00
YORK:	
Woodbridge	251 00
	$6,441 00

ANALYSIS OF PRIZE MONEY PAID BY AGRICULTURAL SOCIETIES IN ONTARIO IN 1918.

Societies.	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous.	Total.
ALGOMA:	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Bruce Mines	51 00	35 75	20 00	....	97 00	203 75
Central Algoma	161 50	137 00	44 00	22 00	805 10	1,169 60
Iron Bridge	17 00	16 25	9 00	3 50	80 15	125 90
Johnston and Aberdeen	37 00	24 00	21 00	3 00	71 75	156 75
North Shore	18 75	29 50	23 25	1 00	73 50	146 00
St. Joseph Island	36 00	21 00	19 25	1 75	155 75	233 75
Thessalon	74 00	38 00	10 00	8 00	154 75	284 75
BRANT:						
Onondaga	44 00	97 00	30 00	16 00	215 25	402 25
Paris	316 00	130 50	133 00	90 00	549 25	1,218 75
South Brant	391 00	168 00	85 00	80 00	620 50	1,344 50
BRUCE:						
Arran and Tara	396 00	149 00	50 00	20 50	304 55	920 05
Carrick	210 00	120 50	33 50	32 50	315 25	711 75
Chesley	216 50	106 00	50 50	4 00	265 37	642 37
Eastnor	41 00	18 00	11 50	3 00	109 80	183 30
Hepworth	139 00	99 35	22 50	4 00	183 10	447 95
Huron Township	135 25	81 00	56 50	23 00	230 85	526 60
Kincardine	160 75	68 00	29 25	12 25	174 50	444 75
Lucknow	196 50	133 75	21 50	44 50	249 95	646 20
North Bruce and Saugeen	132 00	63 00	44 00	27 50	255 55	522 05
Paisley	147 50	80 00	58 25	22 00	387 50	695 25
Pinkerton	53 00	32 75	14 50	7 50	146 75	254 50
Teeswater	185 50	169 50	43 00	61 75	304 90	764 65
Tiverton	148 00	61 75	32 75	19 00	141 50	403 00
Underwood	116 50	66 50	37 75	33 00	138 25	392 00
Wiarton	111 50	113 50	65 00	21 00	214 40	525 40
CARLETON:						
Carleton County	272 25	175 50	90 75	55 50	415 49	1,009 49
Carp	410 00	120 00	30 00	30 00	355 90	945 90
Fitzroy	162 50	83 20	11 50	11 00	288 22	556 42
Metcalfe	270 25	135 40	45 50	43 15	246 40	740 70
DUFFERIN:						
Dufferin	312 00	230 00	108 00	22 00	380 62	1,052 62
Dufferin Central	269 00	225 00	69 00	15 00	475 75	1,053 75
East Luther	186 50	88 50	58 00	16 00	451 35	800 35
DUNDAS:						
Dundas	131 50	....	....	....	....	131 50
Mountain	81 00	184 00	11 25	5 50	224 35	506 10
Winchester	113 25	146 90	43 75	7 25	356 25	667 40
DURHAM:						
Cartwright	99 00	34 00	67 75	7 00	159 60	367 35
Clarke Township	312 00	226 00	64 00	51 00	301 00	954 00
Millbrook	304 00	96 50	42 00	45 00	383 00	870 50
Port Hope	259 50	119 75	114 00	30 00	502 85	1,026 10
West Durham	354 00	210 00	155 00	77 00	590 30	1,386 30
ELGIN:						
Aldboro	163 50	31 50	59 50	21 50	233 75	509 75
Aylmer and E. Elgin	101 00	192 00	49 00	102 00	191 30	635 30
Shedden	84 00	102 75	29 50	10 00	101 95	328 20
South Dorchester	132 00	83 25	23 50	11 00	246 00	495 75
Straffordville	49 50	56 00	21 15	4 50	135 45	266 80
West Elgin	358 00	305 00	55 00	39 00	301 72	1,058 72
ESSEX:						
Amherstburg, Anderdon and Malden	110 00	115 50	61 25	86 00	221 22	593 97
Colchester South	101 25	181 75	42 75	45 50	249 80	621 05
Comber	53 50	96 90	46 50	48 50	215 00	460 40
Essex County	231 00	222 00	115 00	190 00	724 25	1,482 25
Mersea, Leamington and S. Gosfield	205 00	185 00	179 00	133 50	599 50	1,302 00
Windsor and North Essex	205 00	551 00	318 00	315 00	853 50	2,242 50

ANALYSIS OF PRIZE MONEY PAID BY AGRICULTURAL SOCIETIES.—*Continued.*

Societies.	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous.	Total.
FRONTENAC:	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Frontenac	63 00	37 50	25 00	26 50	146 65	298 65
Kennebec	47 00	20 50	19 00	2 00	60 35	148 85
Kingston Industrial	161 00	477 00	158 00	88 00	970 25	1,854 25
Parham	57 00	33 25	25 00	6 00	150 65	271 90
Storrington	58 00	29 40	14 60	17 00	88 00	207 00
Wolfe Island	42 50	55 50	9 75	7 50	136 50	251 75
GLENGARRY:						
Glengarry	167 00	142 50	34 50	22 50	257 00	623 50
Kenyon	120 50	86 25	18 25	10 00	149 45	384 45
St. Lawrence Valley	258 00	151 00	25 00	16 25	325 10	775 35
GRENVILLE:						
Kemptville	68 50	99 50	45 75	9 00	176 85	399 60
Merrickville	168 73	52 00	42 50	17 75	149 60	430 58
South Grenville	(No fair)					
Spencerville	71 00	93 75	24 50	10 00	255 55	454 80
GREY:						
Ayton	126 00	39 00	31 50	23 00	149 90	369 40
Collingwood Tp.	111 00	100 50	22 00	36 00	199 25	468 75
Desboro	206 00	145 50	33 25	10 50	220 25	615 50
East Grey	105 25	36 50	60 50	....	142 60	344 85
Egremont	126 50	92 25	51 00	35 00	238 60	543 35
Hanover, Bentinck & Brant	177 50	87 25	71 50	21 00	214 25	571 50
Holland	181 50	110 50	21 50	27 50	175 25	516 25
Keppel	86 50	42 75	19 00	8 00	182 45	338 70
Kilsyth	261 50	129 00	44 50	27 50	199 00	661 50
Markdale	223 00	75 20	54 00	39 50	226 75	618 45
Meaford & St. Vincent	202 00	157 50	29 50	14 50	422 55	826 05
Normanby	24 00	21 00	13 00	4 25	135 45	197 70
Osprey	116 00	60 50	30 25	6 00	135 50	348 25
Owen Sound	345 00	249 50	66 00	64 00	544 25	1,268 75
Priceville	62 75	55 00	37 50	13 00	134 80	303 05
Proton	217 00	107 00	68 50	26 00	257 00	675 50
Rocklyn	211 50	148 00	30 50	29 50	199 75	619 25
South Grey	22 50	34 00	48 00	8 50	264 75	377 75
Sydenham	130 00	98 00	22 75	21 50	156 25	428 50
Walter's Falls	192 05	122 55	28 00	28 50	194 60	565 70
HALDIMAND:						
Caledonia	375 00	249 50	258 00	111 00	718 50	1,712 00
Canboro	60 00	18 00	6 50	10 00	117 08	211 58
Dunnville	158 00	45 00	18 25	....	199 70	420 95
Haldimand	184 00	93 50	26 25	14 50	242 40	560 65
Southern Branch	140 50	25 00	24 00	1 50	131 05	322 05
Walpole	176 00	115 00	62 50	10 50	214 00	578 00
HALIBURTON:						
Glamorgan	10 13	7 80	2 10	4 00	66 65	90 68
Haliburton	57 25	38 75	7 00	5 50	167 35	275 85
Minden	64 00	40 00	34 50	18 50	150 15	307 15
HALTON:						
Acton	275 00	158 00	55 00	30 00	346 00	864 00
Esquesing	291 00	105 00	83 00	37 00	265 15	781 15
Halton	340 00	289 00	84 00	27 00	408 42	1,148 42
Nelson and Burlington	253 50	142 00	61 00	20 00	358 95	835 45
Trafalgar	950 00	340 00	182 00	76 00	824 25	2,372 25
HASTINGS:						
Bancroft	50 00	29 50	66 00	....	168 60	314 10
Belleville	378 50	141 00	52 50	33 25	281 85	887 10
Frankford	116 50	104 75	107 50	46 75	233 65	609 15
Madoc	234 50	20 25	17 50	53 25	385 50	711 00
Marmora	251 50	81 75	27 00	47 75	279 95	687 95
Maynooth	36 50	12 50	7 00	4 00	78 25	138 25
Shannonville	77 00	60 50	64 20	36 00	147 30	385 00
Stirling	137 75	70 00	33 50	31 75	180 80	453 80
Tweed	103 25	169 25	58 50	65 00	239 75	635 75
Wollaston	80 00	72 00	69 00	40 50	139 50	401 00

ANALYSIS OF PRIZE MONEY PAID BY AGRICULTURAL SOCIETIES.—*Continued.*

Societies.	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous.	Total.
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
HURON:						
Bayfield	93 50	41 50	39 25	26 50	176 50	377 25
Blyth	122 00	99 00	46 50	6 50	180 00	454 00
Dungannon	103 50	53 50	28 50	16 00	180 65	382 15
East Huron	156 00	89 00	35 25	20 50	339 00	639 75
Exeter	158 37	103 00	62 00	31 00	294 45	648 82
Goderich Industrial	126 50	90 00	35 00	20 00	442 70	714 20
Howick	137 50	95 75	35 25	30 50	233 15	532 15
Seaforth	123 00	77 00	46 00	29 00	313 20	588 20
South Huron	(Spring Fair only)					
Turnberry	152 00	60 00	44 00	32 00	288 90	576 90
Zurich	118 50	54 25	26 00	28 00	190 80	417 55
KENORA:						
Dryden	34 00	73 00	18 00	15 00	210 00	350 00
Kenora	75 00	100 00	....	24 00	426 05	625 05
KENT:						
Camden	114 00	5 00	51 50	28 75	162 80	362 05
East Kent	179 50	56 25	97 00	64 00	172 60	569 35
Harwich	44 25	57 00	46 50	40 50	361 82	550 07
Howard	338 00	215 00	175 50	180 00	391 50	1,300 00
Orford	167 50	117 50	94 75	66 00	222 85	668 60
Raleigh and Tilbury	120 00	70 00	59 75	25 50	218 25	493 50
Romney and Wheatley	89 25	50 00	88 40	30 50	160 60	418 75
Wallaceburg	60 50	34 50	64 80	20 00	169 60	349 40
West Kent	134 50	124 25	48 50	29 00	405 65	741 90
LAMBTON:						
Bosanquet	116 25	50 00	22 50	16 50	285 45	490 70
Brooke and Alvinston	235 00	192 65	65 75	....	466 60	960 00
East Lambton	129 00	177 50	90 00	57 50	386 20	840 20
Florence	177 00	65 75	56 30	40 60	156 85	496 50
Forest	144 00	82 50	34 50	42 00	410 65	713 65
Moore	210 50	163 50	70 50	34 50	322 90	801 90
Petrolia and Enniskillen	194 50	165 00	179 00	66 00	417 95	1,022 45
Plympton and Wyoming	135 50	42 50	87 25	40 25	266 20	571 70
Sombra	80 00	40 00	26 50	10 25	146 35	303 10
West Lambton	229 00	291 00	178 50	100 00	601 05	1,399 55
LANARK:						
Dalhousie	53 75	45 00	12 65	....	163 70	275 10
Lanark Tp.	82 25	73 50	7 75	15 75	174 45	353 70
Lanark Village & Bathurst.	76 75	20 00	18 50	8 50	272 45	396 20
Maberly	49 75	33 50	....	3 50	90 81	177 56
North Lanark	608 05	121 00	60 00	39 00	421 00	1,249 05
Pakenham	233 00	39 00	30 00	8 00	261 10	571 10
South Lanark	291 00	193 25	59 50	53 00	500 80	1,097 55
LEEDS:						
Brockville	(No fair)					
Delta	99 90	85 95	56 25	6 30	279 20	527 60
Frankville	122 25	78 25	48 00	32 25	206 60	487 35
Lansdowne	98 00	140 00	24 00	31 00	225 60	518 60
Lombardy	61 75	43 25	22 75	....	237 25	365 00
LENNOX AND ADDINGTON:						
Amherst Island	81 70	61 45	16 50	5 75	123 30	288 70
Centreville	142 00	113 50	19 00	12 00	48 75	335 25
Ernestown	113 00	67 50	54 50	19 00	143 90	397 90
LINCOLN:						
Abingdon	46 75	24 00	55 00	4 00	156 50	286 25
Clinton	136 00	77 50	88 00	38 00	393 85	733 35
Monck	....	....	....	....	165 80	165 80
Niagara Town and Tp.	72 00	....	....	....	156 75	228 75
Peninsular Central	114 00	33 25	39 75	16 75	131 75	335 50

ANALYSIS OF PRIZE MONEY PAID BY AGRICULTURAL SOCIETIES.—*Continued.*

Societies.	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous.	Total.
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
MANITOULIN ISLAND:						
Billings	48 25	73 00	77 00	4 00	196 25	398 50
Gore Bay	77 00	56 00	45 00	9 00	304 10	491 10
Howland	42 75	29 50	6 00	7 75	204 50	290 50
Manitowaning	73 25	73 50	19 75	3 50	190 25	360 25
Providence Bay	90 00	70 50	40 50	6 50	159 00	366 50
MIDDLESEX:						
Caradoc	165 00	32 50	25 50	2 75	203 10	428 85
Delaware	158 00	128 00	56 00	36 25	265 80	644 05
Dorchester	271 00	202 00	31 75	4 00	118 20	626 95
London Tp.	159 00	62 00	23 50	6 50	126 85	377 85
McGillivray	73 00	15 25	16 00	6 00	76 00	186 25
Melbourne	314 50	146 50	43 25	18 00	294 55	816 80
Mosa and Ekfrid	177 00	160 75	21 50	23 40	245 85	628 50
North Middlesex	109 00	52 50	18 50	7 00	179 80	366 80
Parkhill	111 50	51 50	11 25	19 25	315 35	508 85
Strathroy	499 00	282 00	149 00	79 00	743 50	1,752 50
Thorndale	70 75	115 00	27 50	21 00	171 25	405 50
Westminster	110 75	33 50	30 75	25 50	187 20	387 70
MUSKOKA:						
Baysville	31 00	36 50	23 25	18 50	148 25	257 50
Gravenhurst and Muskoka.	46 00	53 50	14 25	6 50	257 96	378 21
Medora and Wood	68 00	102 00	32 00	14 00	208 30	424 30
Morrison	28 00	32 50	6 50	8 50	58 80	134 30
North Muskoka	106 00	70 50	23 00	16 00	306 50	522 00
South Muskoka	292 00	206 00	80 00	77 00	547 40	1,202 40
Stephenson and Watt	96 50	72 50	13 00	1 00	262 50	445 50
Stisted	42 75	38 00	27 25	12 50	109 25	229 75
NIPISSING:						
Astorville	37 00	19 00	8 00	7 50	79 90	151 40
Bonfield	20 50	24 50	15 00	9 00	104 75	173 75
East Nipissing	52 00	81 00	13 50	17 00	306 40	469 90
Sturgeon Falls	191 50	212 00	54 50	23 00	156 00	637 00
Verner	93 00	313 45	42 25	45 00	128 80	622 50
NORFOLK:						
Charlotteville	109 50	59 50	4 00	9 75	211 25	394 00
Courtland	76 45	62 80	26 25	31 00	134 62	331 12
Houghton	73 75	97 75	39 50	22 50	159 25	392 75
Norfolk County	316 00	293 00	148 00	78 50	1,056 50	1,892 00
North Walsingham	80 00	60 00	20 50	20 00	142 40	322 90
Townsend	95 35	13 00	12 25	....	96 20	216 80
Windham	104 75	34 00	8 00	6 75	150 05	303 55
NORTHUMBERLAND:						
Alnwick	(No	fair)				
Brighton	264 00	126 50	66 50	24 50	189 60	671 10
Cobourg Central	(No	fair)				
Colborne	322 50	113 50	45 50	49 00	264 75	795 25
Cramahe	132 30	74 00	38 00	33 50	133 30	411 10
Percy Tp.	457 80	273 50	155 50	65 75	568 50	1,521 05
Seymour	186 75	140 75	70 00	30 50	242 80	670 80
Wooler	216 75	31 00	10 80	8 50	147 15	414 20
ONTARIO:						
Beaverton	278 00	125 00	138 00	34 00	193 65	768 65
Brock	121 50	134 00	84 00	17 00	238 75	595 25
Pt. Perry, Reach & Scugog.	230 00	165 00	92 00	25 00	340 25	852 25
Ramona	48 00	14 00	9 00	1 50	38 20	110 70
Scott	155 00	91 00	35 00	22 50	116 00	419 50
South Ontario	575 00	353 00	198 50	69 50	696 30	1,892 30
Uxbridge	310 00	131 00	105 00	61 00	84 00	691 00

ANALYSIS OF PRIZE MONEY PAID BY AGRICULTURAL SOCIETIES.—*Continued.*

Societies.	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous.	Total.
Oxford:	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Drumbo	290 00	86 00	125 50	26 00	446 25	973 75
East Nissouri	189 00	27 50	4 25	4 00	154 75	379 50
Ingersoll N. & W. Oxford	195 50	87 50	....	12 50	253 00	548 50
North Norwich	218 00	102 75	20 50	35 00	358 50	734 75
South Norwich	113 50	11 00	....	7 00	180 50	312 00
Tavistock	322 00	127 00	66 00	92 00	348 55	955 55
Tillsonburg & Dereham	286 00	133 00	62 00	32 00	359 25	872 25
West Zorra & Embro	180 00	42 00	33 00	24 00	224 50	503 50
Woodstock	444 00	375 00	90 00	42 00	706 45	1,657 45
Parry Sound:						
Armour, Ryerson & Burk's Falls	185 00	141 00	62 50	20 00	319 80	728 30
Christie	82 00	43 00	30 50	3 50	207 50	366 50
Loring	40 00	49 50	55 00	16 00	171 00	330 50
Machar	75 25	36 25	18 75	2 00	148 50	280 75
Magnetawan	67 25	50 00	17 50	13 00	199 10	346 85
McKellar	112 00	101 50	54 75	41 50	323 75	633 50
McMurrich	82 50	41 25	29 00	16 50	170 25	339 50
Parry Sound	151 00	132 00	62 25	....	340 55	685 80
Perry	81 00	84 50	55 50	19 00	198 00	438 00
Powassan	57 50	100 50	62 00	27 00	187 90	434 90
Rosseau	122 50	113 50	34 00	10 50	229 25	509 75
Strong	87 00	48 00	26 50	7 50	284 75	453 75
United Townships	61 00	41 75	35 75	7 00	208 25	353 75
Peel:						
Albion and Bolton	281 00	92 00	71 00	42 00	375 75	861 75
Caledon	123 00	91 75	29 50	12 75	283 86	540 86
Cooksville	247 00	145 00	48 00	23 00	377 70	840 70
Peel	391 00	150 00	125 00	98 00	644 25	1,408 25
Toronto Gore	(Spring Fair only)					
Toronto Tp.	331 00	180 00	49 00	19 00	242 50	821 50
Perth:						
Elma	92 75	67 95	17 50	32 27	192 37	402 84
Fullarton, Logan & Hibbert	207 00	158 00	74 00	55 00	457 15	951 15
Kirkton	167 00	114 00	56 52	18 00	254 10	609 60
Listowel	131 00	30 00	31 00	22 00	206 90	420 90
Mornington	201 50	128 85	26 50	39 00	298 15	694 00
South Perth	138 50	51 00	63 00	24 00	321 00	597 50
Stratford	319 00	163 00	117 00	42 00	738 30	1,379 30
Peterborough:						
East Peterborough	174 00	333 00	155 75	50 50	642 60	1,355 85
Galway	24 00	19 50	12 00	5 50	105 50	166 00
Lakefield	130 00	103 50	57 25	39 00	202 95	532 70
Otonabee	144 00	33 00	26 00	16 00	130 10	349 10
Peterborough Industrial	740 00	384 00	246 00	208 00	836 45	2,414 45
Prescott:						
Alfred	66 00	85 50	17 50	23 50	195 10	387 60
South Plantagenet	120 25	131 50	12 00	21 00	100 35	385 10
Vankleek Hill	343 00	338 00	82 00	57 00	475 25	1,295 25
Prince Edward:						
Ameliasburg	94 00	62 25	36 00	14 25	292 00	498 00
Prince Edward	439 00	527 00	138 00	89 50	824 40	2,017 90
Sophiasburg	86 75	45 00	11 75	4 75	126 70	274 95
Rainy River:						
Atwood	96 00	80 00	21 00	13 00	315 80	525 80
Rainy River Valley	218 00	130 00	68 00	39 25	377 25	832 50
Renfrew:						
Arnprior	420 00	175 00	20 00	8 00	497 00	1.121 00
Cobden	183 00	121 00	39 50	56 00	251 00	650 50
North Renfrew	334 00	244 00	55 00	34 00	510 90	1,177 90
Renfrew	716 50	500 94	98 25	39 00	703 25	2.057 94
Russell:						
Casselman	29 75	32 50	15 00	....	15 25	92 50
Clarence	91 50	47 40	26 50	5 00	106 95	277 35
Russell	213 25	125 35	105 00	13 00	161 85	618 45

ANALYSIS OF PRIZE MONEY PAID BY AGRICULTURAL SOCIETIES.—*Continued.*

Societies.	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous.	Total.
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
SIMCOE:						
Alliston	118 00	15 00	40 00	18 00	311 75	502 75
Barrie	362 00	171 00	68 00	26 00	700 65	1,327 65
Beeton	78 60	76 00	34 00	30 00	194 00	412 60
Bradford & W. Gwillimbury	78 00	40 00	25 00	34 00	402 65	579 65
Coldwater	115 00	54 00	45 00	21 00	212 25	447 25
Cookstown	161 00	66 00	58 50	20 00	271 85	577 35
Flos Tp.	173 50	63 00	75 00	6 00	276 75	594 25
Nottawasaga & G. Northern	139 00	89 00	112 00	18 00	439 60	797 60
Oro	187 00	110 00	57 00	20 00	239 50	613 50
Tiny and Tay	139 00	52 00	54 00	24 00	271 50	540 50
STORMONT:						
Cornwall	164 00	182 00	50 50	19 00	496 20	911 70
Finch	40 70	19 00	....	2 00	99 30	161 00
Roxborough	290 00	193 00	34 50	12 75	236 00	766 25
Stormont	192 25	103 25	43 25	8 75	158 10	505 60
SUDBURY:						
Martland and Cosby	60 50	61 00	10 00	8 00	65 75	205 25
Massey	120 50	90 28	40 50	27 50	150 75	429 53
Warren	105 00	139 00	33 00	23 00	158 50	458 50
TEMISKAMING:						
Charlton	77 50	61 00	12 75	....	183 25	334 50
Cochrane	65 50	49 00	3 00	4 00	155 75	277 25
Englehart	49 00	81 00	10 00	13 00	367 50	520 50
Matheson	28 50	14 50	....	....	66 50	109 50
New Liskeard	99 50	36 75	18 00	7 00	488 80	650 05
Porquis Jct.	1 50	5 00	....	....	33 60	40 10
THUNDER BAY:						
Oliver	82 50	92 00	12 00	9 00	243 50	439 00
West Algoma	157 00	95 00	....	8 00	1,102 25	1,362 25
Whitefish Valley	17 50	25 00	8 50	13 50	151 49	215 99
VICTORIA:						
Eldon	129 00	50 00	22 25	....	89 70	290 95
Fenelon	150 00	105 00	30 00	17 00	189 15	491 15
Mariposa	81 50	24 00	52 00	17 00	124 15	298 65
South Victoria	666 00	724 00	389 00	151 00	724 70	2,654 70
Verulam	202 70	193 50	58 00	60 50	324 70	839 40
WATERLOO:						
Elmira and Woolwich	201 00	61 50	21 00	45 00	264 65	593 15
South Waterloo	583 00	132 00	166 00	74 00	601 75	1,556 75
Wellesley and N. Easthope	235 50	83 50	59 00	52 00	271 30	701 30
Wilmot	238 00	124 50	60 00	63 00	416 20	901 70
WELLAND:						
Bertie	51 50	40 75	19 75	6 63	138 10	256 73
Fenwick	148 00	161 25	47 00	24 00	480 55	860 80
Stamford & Niagara Falls.	(Returns not received)					
Thorold Town and Tp.	153 50	168 00	45 50	34 00	231 65	632 65
Wainfleet	77 50	24 50	19 25	1 00	167 50	289 75
Welland	347 00	372 00	119 00	28 50	691 25	1,557 75
WELLINGTON:						
Arthur	203 00	128 00	24 50	28 00	348 90	732 40
Centre Wellington	227 50	199 50	70 25	19 00	533 75	1,050 00
Erin	260 00	119 50	67 25	41 00	454 85	942 60
Guelph & S. Wellington	(No fair)					
Mount Forest	332 00	153 00	84 00	42 00	353 00	964 00
Palmerston	116 00	64 50	31 50	8 00	187 50	407 50
Peel and Drayton	200 00	158 00	13 00	26 00	197 50	594 50
Puslinch	104 50	68 50	55 00	16 00	202 45	446 45
Rockwood	253 00	106 50	56 00	22 50	271 00	709 00
West Wellington	122 00	57 00	22 75	21 00	279 20	501 95

ANALYSIS OF PRIZE MONEY PAID BY AGRICULTURAL SOCIETIES.—*Concluded.*

Societies.	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous.	Total.
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
WENTWORTH:						
Ancaster	238 00	85 00	75 00	36 00	329 50	763 50
Binbrook	132 50	64 00	68 25	13 00	266 30	544 05
Hamilton and Wentworth	(No fair)					
Rockton	378 00	99 75	102 50	51 00	419 00	1,050 25
Waterdown	140 00	110 50	....	28 50	277 50	556 50
West Flamboro	107 00	30 00	39 00	25 00	250 25	451 25
YORK:						
Markham and E. York	439 00	468 00	287 00	79 00	724 68	1,997 68
Newmarket	359 50	174 00	146 00	80 00	678 00	1,437 50
Queensville	(No fair)					
Richmond Hill	418 00	189 00	39 00	62 00	109 50	817 50
Scarboro	351 00	128 50	53 00	37 00	407 00	976 50
Schomberg	272 00	94 50	44 00	23 00	432 25	865 75
Sutton	178 00	46 00	48 00	32 00	155 75	459 75
Weston, York & Etobicoke	295 00	93 00	30 50	22 00	394 75	835 25
Woodbridge	544 00	70 00	215 00	27 00	806 25	1,662 25
Garden River	34 25	32 50	....	8 25	71 30	146 30
INDIAN SOCIETIES:						
Six Nations	165 25	93 25	14 00	21 00	459 85	753 35
United Indians	52 00	34 50	....	17 00	143 40	246 90
CITIES:						
Canadian National (Toronto)	9,941 00	12,275 00	4,160 00	3,205 00	14,061 50	43,642 50
Central Canada (Ottawa)	5,501 00	3,907 00	903 00	1,022 00	5,455 75	16,788 75
Western Fair (London)	5,417 00	5,609 00	2,259 50	1,850 00	6,546 00	21,681 50
Total: 1918	76,503 83	57,119 02	24,130 00	15,411 60	118,361 40	291,575 85
1917	75,679 43	55,940 79	24,193 31	14,024 20	115,516 25	285,353 98

REPORTS OF STOCK SOCIETIES.

Societies.	RECEIPTS.					EXPENDITURE.			
	Legislative grant.	Members' fees for 1918.	Municipal grant.	Sale of stock.	Total actual receipts.	Purchase of live stock.	Keep of stock.	Officers' salaries.	Total actual expenditure.
	$	$	$	$	$	$	$	$	$
Colchester, North	260	242	150	30	698	727	100	10	854
Cottam	190	417	150	......	805	456	......	25	1,416
Drummond	50	60	50	30	190	......	199	10	213
Dummer and Douro	330	184	......	458	1,249	745	621	14	1,407
Emily	180	100	50	103	483	310	214	17	647
Lakehurst	170	60	......	......	259	290	35	......	326
Oldcastle	355	671	150	......	1,206	1,110	366	67	1,640
Osgoode	235	63	......	72	400	107	279	15	401
South Woodslee	736	908	150	......	1,880	1,708	313	56	2,147
	2,506	2,705	700	693	7,170	5,453	2,127	214	9,051

REPORTS OF AGRICULTURAL SOCIETIES IN ONTARIO, SHOWING RECEIPTS AND EXPENDITURE FOR THE YEAR 1918.

Societies.	Receipts.							Expenditure.					
	Legislative grants.	Municipal grants.	Cash Donations.	Members' fees retained from 1917.	Members' fees paid in 1918.	Gate receipts at exhibitions.	Total actual receipts.	Total prize money paid in cash.	Special attractions.	Officers' salaries.	Total expenditure for agricultural purposes.	Total actual expenditure.	Value of land and buildings.
ALGOMA:	$	$	$	$	$	$	$	$	$	$	$	$	$
Bruce Mines	175	......	12	28	46	202	598	204	......	40	294	472	1,250
Central Algoma	728	525	107	86	302	932	3,442	1,170	402	150	1,246	3,217	15,750
Iron Bridge	102	......	......	25	23	8	161	126	......	13	127	163	......
Johnston and Aberdeen	141	......	10	20	5	17	195	157	......	10	169	200	......
North Shore	119	......	8	20	22	14	368	146	......	22	197	346	290
St. Joseph Island	220	......	5	30	19	21	408	234	......	15	284	460	......
Thessalon	284	50	12	54	27	164	724	285	......	30	375	725	3,000
BRANT:													
Onondaga	126	240	146	39	42	104	982	402	15	42	465	896	......
Paris	360	150	250	73	215	762	2,351	1,219	47	233	1,310	2,324	9,080
South Brant	299	150	252	67	193	976	2,575	1,344	288	235	1,377	2,814	5,500
BRUCE:													
Arran and Tara	288	225	35	115	40	567	1,467	920	133	64	954	1,418	2,000
Carrick	228	150	68	79	204	296	1,353	712	51	32	791	1,385	......
Chesley	185	150	142	98	232	329	1,266	642	35	50	747	1,243	......
Eastnor	76	......	10	39	7	192	591	183	83	46	239	526	425
Hepworth	156	120	43	87	105	275	873	448	......	52	521	811	......
Huron Tp.	187	125	57	82	53	472	1,351	527	264	83	649	1,414	3,000
Kincardine	129	......	100	60	95	367	1,305	445	......	95	485	1,156	......
Lucknow	207	125	161	106	26	342	1,394	646	25	50	717	1,457	1,000
North Bruce and Saugeen	174	115	58	98	47	206	978	522	115	64	597	1,062	......
Paisley	225	150	28	107	88	422	1,402	695	85	120	727	1,307	......
Pinkerton	89	115	23	44	23	41	433	254	10	30	303	478	300
Teeswater	226	75	124	105	42	528	1,525	765	210	50	851	1,466	1,315
Tiverton	115	100	42	68	12	210	1,002	403	42	35	425	758	2,674
Underwood	121	50	10	58	26	108	759	392	7	40	435	658	......
Wiarton	162	155	50	75	41	434	1,226	525	170	79	624	1,285	2,775
CARLETON:													
Carleton County	363	800	412	53	149	459	2,646	1,009	384	185	1,037	2,995	5,100
Carp	270	550	88	85	46	491	2,072	946	45	125	1,038	2,111	6,625

CARLETON.—*Continued.*												
Fitzroy	160	315	122	67	27	170	2,357	556	50	100	661	1,384	450
Metcalfe	241	425	415	82	45	388	2,081	741	70	125	982	1,964	6,800
DUFFERIN:													
Dufferin	259	350	522	117	562	641	3,125	1,053	425	260	1,133	3,473	1,100
Dufferin Central	282	275	233	94	100	828	2,237	1,054	308	133	1,109	1,860	4,950
East Luther	265	275	110	100	94	407	1,920	800	280	85	921	2,187	5,600
DUNDAS:													
Dundas	79	......	94	60	79	529	1,126	131	390	80	143	1,003	1,675
Mountain	186	50	151	73	53	212	1,359	506	72	50	605	1,411	1,100
Winchester	273	......	423	79	145	752	2,888	667	549	90	765	2,523	....
DURHAM:													
Cartwright	130	39	......	67	100	196	592	367	....	25	405	628	....
Clarke Tp.	275	182	179	101	70	589	1,906	954	196	50	1,005	1,684	2,750
Millbrook	314	269	48	96	32	806	2,249	870	210	110	952	2,856	5,950
Port Hope	391	267	120	98	104	740	2,143	1,026	175	118	1,070	1,871	1,481
West Durham	418	275	164	113	61	695	2,366	1,386	235	155	1,447	2,424	6,190
ELGIN:													
Aldboro	210	127	132	97	61	677	1,725	509	197	79	598	1,594	6,812
Aylmer and E. Elgin	300	349	178	....	401	550	2,036	635	196	260	849	1,723	....
Shedden	73	140	83	35	18	214	670	328	139	30	328	714	120
South Dorchester	184	97	93	33	155	256	996	496	167	90	540	974	....
Straffordville	90	43	......	34	80	230	637	267	125	30	317	609	690
West Elgin	296	109	104	66	40	887	1,924	1,059	91	60	1,073	2,126	2,600
ESSEX:													
Amherstburg, Anderdon & Malden	214	250	105	54	48	337	926	594	95	40	692	1,187	3,200
Colchester South	194	150	58	69	70	749	1,406	547	185	64	653	1,093	2,700
Comber	159	150	163	76	49	391	1,206	460	135	51	517	1,086	5,100
Essex County	505	535	230	106	174	1,105	3,238	1,482	485	175	1,583	3,408	3,300
Mersea, Leamington & S. Gosfield	432	350	143	103	1,085	2,038	5,453	1,302	691	81	1,360	3,951	17,850
Windsor and N. Essex	710	1,600	225	112	244	3,337	8,952	2,242	2,266	1,007	2,698	9,784	14,815
FRONTENAC:													
Frontenac	115	50	6	42	19	142	465	299	15	25	299	506	....
Kennebec	80	50	......	24	20	27	205	149	....	22	170	219	....
Kingston Industrial	398	400	1,195	95	232	5,801	9,618	1,854	1,915	355	2,254	10,834	....
Parham	153	50	43	50	32	296	707	272	159	32	313	871	986
Storrington	75	50	59	27	50	210	662	207	98	35	226	660	1,250
Wolfe Island	99	75	185	36	35	135	839	252	63	30	315	714	....
GLENGARRY:													
Glengarry	187	115	59	73	91	736	1,913	623	180	76	652	1,530	....
Kenyon	143	100	28	62	60	176	1,125	384	21	40	416	1,031	5,500
St. Lawrence Valley	286	......	78	109	149	223	1,411	775	40	....	902	1,333	4,420
GRENVILLE:													
Kemptville	166	150	96	60	44	379	1,091	400	117	50	479	913	1,420
Merrickville	169	150	47	43	13	378	1,046	431	10	79	476	958	1,675

REPORTS OF AGRICULTURAL SOCIETIES IN ONTARIO, SHOWING RECEIPTS AND EXPENDITURE FOR THE YEAR 1918.—Continued.

Societies.	Receipts.							Expenditure.					
	Legislative grants.	Municipal grants.	Cash donations.	Members' fees retained from 1917.	Members' fees paid in 1918.	Gate receipts at exhibitions.	Total actual receipts.	Total prize money paid in cash.	Special attractions.	Officers' salaries.	Total expenditure for agricultural purposes.	Total actual expenditure.	Value of land and buildings.
GRENVILLE.—*Continued.*	$	$	$	$	$	$	$	$	$	$	$	$	$
South Grenville	(No fair)												
Spencerville	132	132	75	67	44	632	1,711	455	236	50	506	2,206	2,500
GREY:													
Ayton	118	165	50	46	....	96	497	369	25	34	369	494	....
Collingwood Tp.	119	200	23	55	31	208	652	469	40	65	488	742	425
Desboro	180	115	44	106	92	232	839	615	30	38	653	897	250
East Grey	111	100	55	62	24	141	924	345	172	53	370	1,064	1,765
Egremont	145	75	61	66	33	275	912	544	96	32	496	931	2,440
Hanover, Bentinck and Brant	131	125	42	75	140	638	1,366	571	272	60	605	1,276	10,550
Holland	145	120	70	71	313	36	1,116	516	....	30	591	920	200
Keppel	87	100	159	46	86	54	678	339	....	52	419	668	75
Kilsyth	221	135	50	102	136	298	1,163	661	....	40	744	1,119	1,050
Markdale	207	75	184	70	41	679	1,742	597	284	90	643	1,574	230
Meaford and St. Vincent	216	325	146	82	188	489	2,230	826	140	65	914	1,991	12,050
Normanby	93	100	5	65	11	69	396	198	26	27	223	396	....
Osprey	129	115	10	68	20	260	805	348	85	47	403	712	860
Owen Sound	341	275	272	120	43	851	2,499	1,269	215	210	1,314	1,269	3,000
Priceville	93	90	......	40	41	143	606	303	27	32	346	560	850
Proton	225	75	10	132	77	493	1,314	675	45	70	773	1,339	4,200
Rocklyn	170	125	24	62	263	229	1,030	619	....	63	694	1,052	4,100
South Grey	158	75	63	62	27	347	1,163	378	111	60	447	1,014	4,300
Sydenham	98	125	47	62	146	56	658	428	....	37	446	685	500
Walter's Falls	149	140	177	67	211	230	1,557	566	40	55	653	1,533	1,300
HALDIMAND:													
Caledonia	518	50	25	84	99	2,400	5,006	1,712	1,028	258	1,776	4,065	8,111
Canboro	56	100	32	21	39	70	382	212	....	20	212	331	800
Dunnville	152	125	10	50	67	515	1,502	421	711	100	462	1,579	7,000
Haldimand	199	50	65	....	148	361	1,381	561	332	99	686	1,558	4,800
Southern Branch	113	75	43	....	82	149	561	322	25	37	359	623	400
Walpole	181	100	114	....	269	192	1,233	578	92	65	600	1,131	....

HALIBURTON:													
Glamorgan	53	......	......	7	13	5	86	91	....	25	92	131	270
Haliburton	276	50	......	44	24	141	654	276	153	35	288	608	....
Minden	273	......	......	33	9	150	481	307	....	20	325	402	870
HALTON:													
Acton	211	......	105	73	99	622	1,445	864	188	65	888	1,469	221
Esquesing	244	50	140	96	35	455	1,039	781	40	79	789	1,175	....
Halton	382	200	528	95	81	897	2,698	1,148	457	220	1,260	2,670	10,700
Nelson and Burlington	232	245	288	77	151	576	2,076	835	58	75	888	2,003	313
Trafalgar	338	600	3,616	142	95	1,498	8,226	2,372	841	10	2,381	9,580	19,000
HASTINGS:													
Bancroft	237	......	36	65	26	308	809	314	125	80	356	740	1,725
Belleville	342	200	255	37	58	726	2,323	887	70	153	927	2,238	....
Frankford	243	......	286	72	35	349	1,242	609	....	100	677	1,409	5,600
Madoc	269	......	385	139	19	343	1,795	711	75	95	833	1,690	210
Marmora	112	30	217	54	46	380	1,169	688	139	53	729	1,200	1,650
Maynooth	107	......	14	28	26	44	343	138	18	22	173	299	....
Shannonville	141	20	56	36	30	496	1,003	385	163	70	406	834	750
Stirling	176	20	187	96	30	256	1,200	454	80	79	554	1,183	615
Tweed	198	50	68	76	39	950	1,701	636	195	75	685	1,379	....
Wollaston	174	35	41	44	52	145	671	401	....	30	458	729	3,075
HURON:													
Bayfield	102	20	42	64	112	197	765	377	66	42	377	670	1,500
Blyth	120	35	151	78	141	392	1,439	454	183	65	480	1,013	2,709
Dungannon	124	......	16	89	30	401	981	382	157	64	403	991	....
East Huron	198	10	39	96	41	704	1,709	640	268	75	690	1,540	5,700
Exeter	210	40	145	83	128	745	1,615	649	310	64	716	1,400	3,175
Goderich Industrial	232	......	156	87	78	1,194	2,145	714	695	100	721	2,290	....
Howick	147	60	22	62	35	335	904	532	35	....	623	909	720
Seaforth	197	......	15	103	133	383	1,519	588	246	65	610	1,974	2,340
South Huron	(Spring Fair only)												
Turnberry	166	95	44	165	172	766	2,043	577	305	75	657	1,817	1,080
Zurich	128	35	......	83	94	262	906	418	53	46	461	876	1,700
KENORA:													
Dryden	353	50	......	30	48	49	722	350	....	60	420	722	1,200
Kenora	528	280	346	48	54	242	2,716	625	63	320	691	2,842	774
KENT:													
Camden	124	113	32	55	75	619	1,198	362	210	65	381	1,225	3,312
East Kent	238	75	73	86	185	443	2,919	569	380	120	634	3,214	7,450
Harwich	194	175	45	73	97	525	1,589	550	197	137	616	1,269	3,725
Howard	324	150	......	105	65	1,783	3,828	1,300	337	135	1,369	2,387	6,950
Orford	243	150	69	104	164	342	1,392	669	17	60	779	1,212	3,000
Raleigh and Tilbury	133	150	104	58	178	201	1,226	493	68	52	525	1,083	2,800
Romney and Wheatley	126	200	......	86	151	323	1,241	419	111	61	425	916	3,300

REPORTS OF AGRICULTURAL SOCIETIES IN ONTARIO, SHOWING RECEIPTS AND EXPENDITURE FOR THE YEAR 1918—Continued.

Societies.	Receipts.							Expenditure.					
	Legislative grants.	Municipal grants.	Cash donations.	Members' fees retained from 1917.	Members' fees paid in 1918.	Gate receipts at exhibitions.	Total actual receipts.	Total prize money paid in cash.	Special attractions.	Officers' salaries.	Total expenditure for agricultural purposes.	Total actual expenditure.	Value of land and buildings.
Kent.—*Continued.*	$	$	$	$	$	$	$	$	$	$	$	$	$
Wallaceburg	120	560	......	54	55	285	1,210	349	131	75	418	1,643	5,125
West Kent	310	400	188	63	71	1,262	2,867	742	865	253	840	3,281	13,150
Lambton:													
Bosanquet	175	165	36	65	98	274	1,094	491	57	50	522	949	3,510
Brooke and Alvinston	266	275	61	84	58	898	2,216	960	69	100	1,065	1,715	6,900
East Lambton	245	100	39	67	44	801	1,586	840	295	42	928	1,523	950
Florence	161	280	28	80	116	328	1,336	496	121	62	615	1,143	2,825
Forest	223	245	42	73	113	494	1,573	714	300	60	766	1,432	4,575
Moore	241	250	282	78	162	845	2,056	802	231	104	885	1,602	2,700
Petrolia and Enniskillen	354	500	......	86	38	699	2,041	1,022	265	100	1,137	2,151	3,000
Plympton and Wyoming	163	150	27	53	101	251	914	572	42	43	622	857	1,610
Sombra	107	75	27	45	43	191	822	303	....	50	407	810	1,125
West Lambton	355	350	817	94	64	1,596	4,427	1,400	793	260	1,492	3,861	3,150
Lanark:													
Dalhousie	99	50	3	36	179	168	862	275	26	50	304	743	2,465
Lanark Tp.	121	50	106	36	57	323	1,553	354	10	79	405	1,314	1,485
Lanark Village and Bathurst	170	100	128	65	12	323	920	396	100	106	397	812	650
Maberly	68	50	89	68	13	213	830	178	65	58	235	704	1,580
North Lanark	449	425	599	39	197	1,181	3,076	1,249	....	195	1,303	3,286	18,250
Pakenham	165	75	132	65	121	292	930	571	58	51	584	1,271	2,170
South Lanark	314	475	660	121	28	1,308	3,862	1,098	497	135	1,128	3,597	10,150
Leeds:													
Brockville	383	......	......	79	16	....	558	....	....	105	....	822	3,530
Delta	188	150	121	61	105	952	2,070	528	97	94	558	1,574	4,000
Frankville	178	150	70	150	11	156	1,040	487	100	50	511	1,123	450
Lansdowne	160	150	8	68	34	454	1,499	519	210	75	632	1,493	7,375
Lombardy	147	147	45	169	10	187	742	....	25	44	....	692	152

Lennox and Addington:													
Amherst Island	140	35	65	59	71	24	364	289	11	20	301	348	....
Centreville	83	150	75	34	65	415	841	335	....	35	347	645	....
Ernestown	109	100	28	48	31	542	968	398	95	62	405	827	....
Lincoln:													
Abingdon	65	100	52	52	15	185	658	286	166	30	287	643	1,200
Clinton Tp.	213	250	15	85	165	812	1,873	733	232	90	833	2,011	5,065
Monck	99	50	25	59	13	35	293	166	....	42	188	343	1,840
Niagara Town and Tp.	......	225	117	28	56	101	694	229	199	40	255	823	55
Peninsular Central	67	150	92	48	69	256	767	335	170	70	342	792	2,725
Manitoulin:													
Billings	293	......	32	58	7	125	538	398	....	39	416	585	2,575
Gore Bay	462	......	26	53	10	236	915	491	....	69	536	830	2,100
Howland	186	25	......	49	44	107	409	290	....	27	308	442	1,000
Manitowaning	303	25	43	46	24	121	592	360	....	65	400	565	700
Providence Bay	261	......	18	32	16	145	497	366	....	20	398	519	....
Middlesex:													
Caradoc	137	100	67	61	111	262	1,316	429	208	50	491	1,191	2,010
Delaware	172	75	231	61	112	408	1,366	644	245	30	645	1,831	780
Dorchester	220	75	127	....	125	469	1,464	627	172	104	659	1,155	1,195
London Tp.	106	200	291	70	63	297	1,384	378	151	62	458	1,481	2,000
McGillivray	55	50	20	39	15	62	304	186	....	25	211	337	....
Melbourne	216	100	116	92	92	879	1,872	817	375	50	842	1,755	1,825
Mosa and Ekfrid	214	125	238	94	75	630	1,978	628	280	60	688	1,662	4,620
North Middlesex	118	......	73	68	28	262	860	367	145	75	394	930	720
Parkhill	138	......	185	62	29	598	1,362	509	192	55	509	1,574	2,500
Strathroy	467	250	267	88	111	1,705	4,239	1,752	960	104	1,846	3,943	14,600
Thorndale	117	75	231	35	101	334	1,319	405	162	92	452	1,085	2,550
Westminster	122	75	170	35	104	283	866	388	137	50	427	807	125
Muskoka:													
Baysville	204	......	43	39	8	12	303	257	....	15	271	349	20
Gravenhurst and Muskoka	429	25	79	62	19	141	905	378	143	75	466	914	400
Medora and Wood	277	75	34	50	35	51	750	424	....	35	523	716	....
Morrison	149	......	3	35	12	73	271	134	....	....	134	183	985
North Muskoka	459	90	106	81	36	223	1,184	522	55	68	645	1,154	3,950
South Muskoka	768	160	350	122	69	380	2,315	1,202	86	105	1,330	2,680	2,350
Stephenson and Watt	443	50	43	52	17	127	981	445	36	78	537	939	1,200
Stisted	216	25	40	40	10	41	384	230	....	32	269	354	1,035
Nipissing:													
Astorville	153	......	......	20	21	....	206	151	....	22	151	223	600
Bonfield	191	25	......	29	14	22	360	174	....	30	199	377	1,140
East Nipissing	351	......	26	42	48	141	681	470	....	60	470	606	....

REPORTS OF AGRICULTURAL SOCIETIES IN ONTARIO, SHOWING RECEIPTS AND EXPENDITURE FOR THE YEAR 1918—Continued.

Societies.	Receipts.							Expenditure.					
	Legislative grants.	Municipal grants.	Cash donations.	Members' fees retained from 1917.	Members' fees paid in 1918.	Gate receipts at exhibitions.	Total actual receipts.	Total prize money paid in cash.	Special attractions.	Officers' salaries.	Total expenditure for agricultural purposes.	Total actual expenditure.	Value of land and buildings.
NIPISSING.—*Continued.*	$	$	$	$	$	$	$	$	$	$	$	$	$
Sturgeon Falls	428	250	88	72	21	446	1,315	637	200	....	657	1,373	4,500
Verner	423	50	......	65	30	195	1,047	622	....	30	702	1,061	....
NORFOLK:													
Charlotteville	134	......	50	14	91	278	595	394	15	67	433	640	....
Courtland	106	25	101	26	121	170	713	331	....	59	397	681	....
Houghton	114	......	32	30	160	391	771	393	31	104	421	748	1,450
Norfolk County	542	......	634	....	524	2,501	5,340	1,892	570	300	1,932	4,435	27,000
North Walsingham	108	......	57	37	215	164	664	323	....	52	367	577	565
Townsend	74	15	74	....	96	126	622	217	26	75	218	681	1,500
Windham	103	10	18	27	79	165	623	303	40	40	335	555	650
NORTHUMBERLAND:													
Alnwick	134	40	......	37	40	....	324	....	....	....	....	5	800
Brighton	263	99	114	79	25	364	1,290	671	81	50	705	1,293	....
Cobourg Central	250	74	4	66	....	....	339	....	....	....	20	93	20,700
Colborne	255	76	223	70	24	415	1,128	795	....	47	832	1,049	825
Cramahe	154	96	196	61	21	101	766	411	30	42	428	684	850
Percy Tp.	436	......	277	119	44	1,105	2,447	1,521	....	90	1,567	2,160	4,450
Seymour	216	364	131	100	199	776	1,952	671	156	160	884	2,165	3,350
Wooler	118	110	173	46	30	302	921	414	....	35	484	8 16	575
ONTARIO:													
Beaverton	172	200	193	71	135	630	2,620	769	18	125	813	2,834	7,300
Brock	195	125	190	70	59	271	1,302	595	257	55	615	1,297	....
Port Perry, Reach and Scugog	196	......	140	54	67	357	1,130	852	120	50	861	1,367	1,200
Ramona	41	......	......	19	23	19	133	111	....	12	111	142	386
Scott	115	20	141	35	46	214	829	419	....	52	456	890	....
South Ontario	488	250	656	121	79	2,368	5,103	1,892	996	205	1,893	5,583	8,300
Uxbridge	193	50	5	35	44	1,111	2,009	691	243	154	692	1,583	....

OXFORD:													
Drumbo	299	......	79	59	80	665	1,620	974	73	91	992	1,510	335
East Nissouri	123	25	74	27	105	116	733	379	45	54	462	886	....
Ingersoll and W. Oxford	158	175	159	48	163	559	1,478	548	225	140	566	1,723	2,600
North Norwich	212	95	282	52	222	397	1,804	735	248	100	736	1,654	2,000
South Norwich	133	100	88	....	120	152	848	312	180	52	362	834	850
Tavistock	233	70	126	95	64	423	1,475	956	128	11	995	1,532	....
Tillsonburg and Dereham	198	......	242	50	275	884	2,496	872	730	105	1,064	2,606	8,600
West Zorra and Embro	187	......	15	72	135	363	813	503	20	37	619	887	550
Woodstock	460	350	890	71	183	1,662	4,943	1,657	1,079	200	1,690	4,367	20,200
PARRY SOUND:													
Armour, Ryerson and Burk's Falls	619	100	200	77	15	204	1,497	728	50	75	793	1,459	3,060
Christie	306	35	103	62	8	35	757	366	....	40	442	633	150
Loring	276	......	......	48	6	85	494	330	....	27	361	489	675
Machar	271	50	45	19	34	77	848	281	....	53	360	633	2,825
Magnetawan	360	......	9	51	17	39	618	347	10	19	396	620	650
McKellar	509	50	55	67	13	77	1,054	633	....	29	702	1,128	1,735
McMurrich	372	25	86	42	13	71	738	339	....	54	407	643	1,125
Parry Sound	561	345	500	94	77	685	2,666	686	710	225	704	2,463	7,400
Perry	441	50	87	52	19	83	952	438	7	75	536	999	2,345
Powassan	415	......	76	58	10	131	918	435	14	62	527	887	1,336
Rosseau	389	15	63	65	33	83	868	535	....	62	603	962	....
Strong	383	......	140	42	12	90	722	454	5	40	486	771	1,850
United Townships	317	......	14	58	39	49	705	354	....	22	417	651	100
PEEL:													
Albion and Bolton	269	300	16	101	28	577	1,597	862	191	60	884	1,640	2,200
Caledon	134	230	126	57	216	208	1,148	541	242	105	588	1,467	745
Cooksville	254	159	356	170	65	442	1,620	841	56	90	876	1,385	1,900
Peel	445	440	362	69	124	1,631	4,107	1,408	285	309	1,437	3,837	6,300
Toronto Gore	(Spring fair only.)												
Toronto Tp.	293	260	90	116	57	133	1,556	821	110	108	939	1,733	3,300
PERTH:													
Elma	108	25	73	69	70	134	772	403	20	62	411	741	1,450
Fullarton, Logan and Hibbert	275	485	140	123	67	622	2,081	951	84	306	1,013	2,129	3,624
Kirkton	185	55	44	78	325	321	1,286	610	86	104	710	1,357	2,475
Listowel	146	......	90	71	66	250	1,035	421	116	75	453	960	2,350
Mornington	177	92	35	95	454	532	1,635	694	122	129	70[illegible]	1,341	4,050
South Perth	213	275	59	49	180	615	1,426	597	35	100	615	1,363	5,800
Stratford	366	50	344	130	360	930	3,532	1,379	854	190	1,452	3,888	....
PETERBOROUGH:													
East Peterborough	405	175	134	79	42	1,310	2,467	1,356	160	104	1,417	2,546	3,010
Galway	91	145	19	23	14	132	473	166	78	25	166	406	2,600
Lakefield	131	175	102	57	16	373	1,178	533	85	25	547	1,062	4,000
Otonabee	140	75	59	73	12	126	802	349	....	37	414	726	810
Peterborough Industrial	682	675	83	118	113	5,998	15,467	2,414	2,989	135	2,480	16,983	....

REPORTS OF AGRICULTURAL SOCIETIES IN ONTARIO SHOWING RECEIPTS AND EXPENDITURE FOR THE YEAR 1918—Continued.

Societies.	Receipts.							Expenditure.					
	Legislative grants.	Municipal grants.	Cash donations.	Members' fees retained from 1917.	Members' fees paid in 1918.	Gate receipts at exhibitions.	Total actual receipts.	Total prize money paid in cash.	Special attractions.	Officers' salaries.	Total expenditure for agricultural purposes.	Total actual expenditure.	Value of land and buildings.
	$	$	$	$	$	$	$	$	$	$	$	$	$
PRESCOTT:													
Alfred	116	25	109	92	42	278	936	388	13	40	439	950	2,400
South Plantagenet	117	25	97	40	10	334	679	385	38	40	405	664	275
Vankleek Hill	339	25	221	88	97	851	1,743	1,295	60	102	1,295	1,934	8,100
PRINCE EDWARD:													
Ameliasburg	172	......	55	81	104	271	1,006	498	....	77	601	985	....
Prince Edward	576	500	478	85	1,193	2,495	7,350	2,018	1,337	230	2,150	6,470	24,800
Sophiasburg	126	......	67	49	25	196	577	275	....	25	345	460	....
RAINY RIVER:													
Atwood	523	300	225	82	47	90	1,343	526	....	....	670	1,050	....
Rainy River Valley	652	65	551	75	37	257	1,978	832	43	110	976	2,119	3,865
RENFREW:													
Arnprior	286	325	444	85	174	831	2,755	1,121	500	115	1,293	3,302	5,350
Cobden	230	160	285	72	19	375	2,419	650	....	79	795	2,753	7,000
North Renfrew	359	100	455	89	127	963	3,108	1,178	....	108	1,277	2,249	19,250
Renfrew	619	675	430	19	374	2,975	7,990	2,058	558	200	2,189	11,685	28,855
RUSSELL:													
Casselman	56	125	181	39	68	80	678	92	17	55	103	451	5,300
Clarence	87	50	......	60	7	201	390	277	....	50	289	532	1,000
Russell	331	75	473	76	49	611	2,044	618	332	....	636	1,957	....
SIMCOE:													
Alliston	162	......	141	95	58	803	1,409	503	329	50	560	1,352	....
Barrie	377	250	352	104	54	1,497	3,375	1,328	549	166	1,428	3,784	....
Beeton	158	45	269	51	67	244	1,225	413	208	109	428	1,006	2,550
Bradford and W. Gwillimbury	166	50	81	82	95	478	1,493	580	159	79	639	1,800	6,500
Coldwater	146	100	220	63	23	668	1,616	447	220	60	508	1,498	2,575
Cookstown	178	80	113	135	25	279	1,052	577	75	90	623	1,125	1,330
Flos Township	165	200	175	67	67	939	2,187	594	471	85	635	1,910	4,425
Nottawasaga and G. Northern	232	275	304	66	66	1,826	3,612	798	434	175	892	4,064	910
Oro	183	50	167	100	100	416	1,159	613	116	54	632	971	400
Tiny and Tay	134	75	......	75	39	707	1,445	540	225	75	585	1,594	....

Stormont:													
Cornwall	306	......	40	96	60	1,770	2,784	912	648	250	948	3,042	2,750
Finch	73	50	118	38	24	155	513	161	47	26	180	417	400
Roxborough	193	75	213	68	105	584	1,319	766	60	40	816	1,257	650
Stormont	142	......	198	....	98	404	855	506	5	22	524	723	525
Sudbury:													
Martland and Cosby	117	50	12	36	15	....	244	205	....	15	205	226	150
Massey	360	......	......	55	54	245	758	430	....	56	467	737	2,950
Warren	278	......	......	38	13	95	537	458	....	37	421	574	800
Temiskaming:													
Charlton	298	25	78	31	27	104	768	334	8	62	416	770	1,985
Cochrane	176	......	326	43	41	60	803	277	....	50	295	711	....
Englehart	346	25	128	49	48	119	905	520	....	66	630	975	3,220
Matheson	148	......	......	24	43	....	309	109	....	50	111	283	....
New Liskeard	531	100	162	67	54	241	1,621	650	....	104	743	1,572	6,050
Porquis Jct.	47	......	4	47	55	23	145	40	....	....	41	145	....
Thunder Bay:													
Oliver	415	50	127	94	23	197	1,400	439	161	64	564	1,385	5,150
West Algoma	900	......	102	102	115	655	3,186	1,362	233	430	1,572	4,347	41,215
Whitefish Valley	165	70	190	52	23	87	824	216	15	50	277	736	300
Victoria:													
Eldon	117	105	122	40	40	92	745	291	....	25	310	613	....
Fenelon	152	110	71	61	14	219	741	491	20	25	526	795	....
Mariposa	107	50	78	49	50	131	661	299	25	40	299	620	....
South Victoria	793	100	411	108	162	3,929	7,842	2,655	1,347	605	2,680	10,424	19,875
Verulam	261	75	123	86	58	460	1,552	839	54	53	898	1,392	6,430
Waterloo:													
Elmira and Woolwich	147	150	179	71	58	669	1,380	593	221	49	602	1,309	4,500
South Waterloo	464	575	523	....	316	716	3,190	1,557	114	177	1,676	2,997	1,500
Wellesley and N. Easthope	190	150	76	....	60	220	1,121	701	99	75	729	1,048	2,500
Wilmot	242	270	351	94	32	431	1,806	902	27	106	947	1,978	450
Welland:													
Bertie	141	255	109	39	180	296	1,244	257	507	10	331	1,278	....
Fenwick	279	349	86	69	110	1,051	2,891	870	578	115	948	2,890	6,090
Stamford and Niagara Falls	Returns not received												
Thorold Town and Township	137	507	346	57	100	577	2,292	633	467	120	664	2,064	12,300
Wainfleet	88	182	55	30	49	65	507	290	....	50	311	503	150
Welland	415	377	691	64	302	2,382	6,207	1,558	879	177	1,620	5,207	26,900
Wellington:													
Arthur	217	55	117	124	32	416	1,917	732	105	120	797	1,641	2,500
Centre Wellington	325	125	352	114	123	587	2,100	1,050	123	131	1,122	2,093	....
Erin	291	75	177	121	86	801	2,045	943	85	95	1,016	1,938	2,400
Guelph and S. Wellington	(No Fair)												
Mount Forest	297	60	176	159	120	467	1,791	964	141	70	1,027	1,582	2,800
Palmerston	122	10	26	66	22	193	898	407	35	45	505	894	2,550
Peel and Drayton	138	55	......	65	25	305	1,172	594	166	74	615	1,135	2,000

REPORTS OF AGRICULTURAL SOCIETIES IN ONTARIO, SHOWING RECEIPTS AND EXPENDITURE FOR THE YEAR 1918—Concluded.

Societies.	Receipts.							Expenditure.					
	Legislative grants.	Municipal grants.	Cash Donations.	Members' fees retained from 1917.	Members' fees paid in 1918.	Gate receipts at exhibitions.	Total actual receipts.	Total prize money paid in cash.	Special attractions.	Officers' salaries.	Total expenditure for agricultural purposes.	Total actual expenditure.	Value of land and buildings.
WELLINGTON.—*Continued.*	$	$	$	$	$	$	$	$	$	$	$	$	$
Puslinch	159	50	......	55	470	218	1,135	446	35	56	509	1,050	200
Rockwood	199	50	271	73	77	428	1,322	709	....	64	794	1,288	3,100
West Wellington	125	60	93	65	67	231	1,176	502	156	60	526	1,104	1,250
WENTWORTH:													
Ancaster	215	300	154	42	117	726	1,932	763	469	140	783	1,934	4,380
Binbrook	79	150	213	46	106	278	1,209	544	250	....	564	1,212	135
Hamilton and Wentworth	(No	Fair)											
Rockton	328	200	185	....	266	770	2,473	1,050	316	125	1,051	2,621	151
Waterdown	164	200	275	39	88	238	1,334	556	53	40	607	1,247	....
West Flamboro	120	175	201	51	62	290	1,174	451	86	77	477	1,128	127
YORK:													
Markham and E. York	688	325	1,038	122	91	1,826	7,318	1,998	664	38	2,061	7,840	20,000
Newmarket	401	200	778	101	89	1,490	4,029	1,437	842	175	1,438	3,596	10,250
Queensville	(No	Fair)											
Richmond Hill	201	85	164	60	55	747	1,735	817	70	79	872	1,692	3,900
Scarboro	329	100	904	95	59	417	2,367	976	30	125	1,052	2,152	5,284
Schomberg	196	85	176	33	92	565	1,627	866	197	53	867	1,475	2,500
Sutton	137	65	183	89	75	195	1,104	460	152	60	476	1,075	2,600
Weston, York and Etobicoke	230	750	394	51	85	1,083	2,963	835	450	156	843	2,749	3,300
Woodbridge	501	275	313	93	56	1,872	3,791	1,662	80	200	1,871	4,065	15,700
INDIAN SOCIETIES:													
Garden River	50	75	......	....	18	38	219	146	....	....	146	368	....
Six Nations	100	......	27	57	125	900	2,009	753	334	96	809	1,727	3,103
United Indian	100	150	5	41	23	161	592	247	126	26	289	608	....
Totals	75937	44050	49398	20,712	25,839	171,139	515,294	209,410	59,660	26,369	217,481	458,677	1,032,247

Ontario Department of Agriculture

APPENDIX
TO
ANNUAL REPORT
OF THE
Agricultural Societies
1919

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS AND PRIZE-WINNING GRAIN AT WINTER FAIRS
THE CANADIAN NATIONAL AND CENTRAL CANADA EXHIBITIONS

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

Printed by
THE RYERSON PRESS

APPENDIX

TO

REPORT OF AGRICULTURAL SOCIETIES

The promise of an early spring in 1919 was not fulfilled, as the excessive quantity of rain which fell during the period when seeding operations are generally carried on, and for some time after, prevented sowing of crops to the best advantage. This wet period was succeeded by a long continued dry spell, which checked proper development of the heads and straw of the grain and the growth of corn and roots in many sections of the province with the result of a shortage in all crops except hay, which produced a bigger bulk of fodder than usual and was cured and put into the barns in first-class condition. In spite of wet weather drawbacks, good crops were grown in some districts as was evidenced by the splendid sheaves among the Field Crop Exhibit at the Canadian National and Central Canada Exhibitions. The rules and regulations governing entry at these shows, and also at the Guelph and Ottawa Winter Fairs, were amended this year so as to permit of all the seven prize winners and also those who scored 85 points and over exhibiting at them. Formerly only the first five winners were eligible.

In accordance with a resolution passed at the Convention of the Ontario Association of Fairs and Exhibitions it was decided that all prize winners in a Society must exhibit a sheaf at their local fair, provided that there were at least three prizes offered by the Society, amounting to $5.00, $4.00 and $3.00. The interest shown by the Societies in the Field Crop Competitions is manifested by the keen discussions on this branch of the Agricultural Societies' work by the delegates at the Annual Convention, who recognize the splendid educational value of these competitions, in addition to the great financial benefit they are to all who take part in them, owing to the largely increased sale value of the grain which is harvested from the prize fields. One hundred and sixty Societies took part in the Standing Field Crop Competitions in 1919, 105 in two crops and 57 in one. Entries in oats were 138, in potatoes 44, spring wheat 34, corn 32, fall wheat 6, turnips 5, mangels 3, barley 2 and 1 in peas, beans and clover.

The names of those competitors only who scored seventy points and over appear in this Appendix to the Agricultural Societies' Report. The numbers in the column to the right of the total scores refer to the weeds found in the competitors' fields the key to which will be found on pages 98 and 99.

J. Lockie Wilson,

Superintendent.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
ALGOMA.		(20)	(25)	(10)	(20)	(25)	(100)	
BRUCE MINES AGR. SOCIETY.								
Judge—R. J. Gordon Hill, Hillside.								
J. R. Stobi, Port Lock	Ligowa	18½	24	8	18	23½	90§	
Sam'l Rowe, Bruce Mines, R.R. 1	O. A. C. 72	14½	24	9	19	23	89½	
R. S. McEwen, do R.R. 1	Tartar King	17	23	9	19	23	89§	
Jos. Rogers, do R.R. 3	Banner	17	23	9	18	21	88	
N. S. Pace, do	O. A. C. 72	16	24	8½	18	20½	87	
Fred Hopper, do R.R. 1	Granary Filler	16½	25	9	17	21	86½	§
J. C. Wilson, do R.R. 1	do	16	23	8	16	24	85§	
H. Shusky, do R.R. 3	do	14½	23	9	17	23	84½	§
J. Shaule, do	Banner	14	19	8	16	19	76	
Chas. W. Hopper, do R.R. 1	do	14½	15	7	18	19½	74	
CENTRAL ALGOMA AGR. SOCIETY.								
Judge—R. J. Gordon Hill, Hillside.								
Jno. H. Knight, Sault Ste. Marie, R.R. 1	Banner	18½	20	10	17	24	89½	
G. H. Farmer, do	do	16	25	7	19	22	89	
C. W. Eggesfield, do	do	15½	25	7	19	21½	88	
C. A. Somes Goulais River	O. A. C. 72	16	23	9	17	21	86	
J. N. McAuley, do	do	16	21	8½	17	22½	85	
Jno. Holmberg, Sault Ste. Marie	White Wave	16	20	8	17	22	81	
W. J. Conway, do	20th Century	14	24	7	15	20½	78½	§
NORTH SHORE AGR. SOCIETY.								
Judge—P. R. Owens, Powassan.								
Alex Stewart, Bar River	Northland	18	22	8	17	22½	87½	17
Carson Moore, MacLennan	Imp. Ligowa	16½	23	8	17	22½	87	
E. D. Evoy, Bar River	Northland	17	20	9	17	22	85	15, 17
J. E. Johnstone, Echo Bay	do	15½	21	8½	18	21½	84½	17, 4
J. A. Davidson, MacLennan	Imp. Ligowa	16½	20	8	17	22½	84	
A. L. Tuckett, Echo Bay	do	16	21	8	17	21½	83½	
Alex Brodie, Bar River	O. A. C. 72	16½	18	8	17	23½	83	
C. A. Hurley, Echo Bay	Northland	17	17	8	18	22	82	4
G. W. Evoy, Bar River	O. A. C. 72	15	20	7	17	22	81	17
Wm. Barkley, do	Northland	14½	18	8½	17	22½	80½	4, 17
W. S. Chappell, do	Early Siberian	16	18	7	18	21	80	15, 9
Jno. W. Booth, do	New Leader	14½	17	8	17	21½	78	2

*General appearance—Considering stand of crop, type of plant, vigor and uniformity of growth, method of seeding and absence of lodging.

†Yield and quality of grain—Considering proportion of well-filled heads of plump grain of good quality and uniformity of maturity.

‡See key page.

§Points deducted for non-standard variety.

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores	‡Weeds in competitors' fields.
THESSALON AGR. SOCIETY.		(20)	(25)	(10)	(20)	(25)	(100)	
Judge—P. R. Owens, Powassan.								
Robt. Horricks, Bruce Mines ..	O. A. C. 72....	18	22	9	18	22	89	
Alex. Duff, Bruce Mines, R.R. 1	do	17½	22½	9	18	21½	88½	
Thos. Corduke, Thessalon, R.R.2	do	17	22	8	18½	22	87½	15
Jno. H. Hopper, do R.R. 1	Granary Filler..	17½	22	7	18	22½	87	
Herb. Allan, do R.R. 2	O. A. C. 72......	15½	22	9	17	23	86½	17
James Mills, Bruce Mines......	do	17½	22	7	17	22½	86	15
J. R. McLennan, Livingstone Creek.	McLennan's Surprise.......	16½	22	7	19	21	85½	17
Proud Bros. Bruce Mines	Granary Filler..	16½	20	7	18½	22½	84½	15, 17
Alex J. Bell, Sowerby	Abundance	16½	21	7	18	21½	84	
Milton Hopper, Thessalon, R.R.1	O. A. C. 72......	14½	22	6	18½	21½	82½	17
D. McLennan, Livingston Creek	McLennan's Surprise.......	15	20	8	19	20	82	4
J. Broughton, do	Irish............	16½	18	7	18	22	81½	4, 2
I. Leach, Thessalon, R.R. 2....	O. A. C. 72....	17	18	8	17	21	81	4, 17
Wm. Weir, do R.R. 2....	do	15	18	8	16	22	79	
Jno. McDougall, Sowerby	Banner..........	15	17	8	17	21	78	2, 17
Geo. Mortimore, Thessalon, R.R. 2	Granary Filler..	13½	18	7	17	22	77½	15
J. Walker, Thessalon, R.R. 2...	O. A. C. 72.....	14	17	8	16	21	76	15, 4
BRANT								
ONONDAGA AGR. SOCIETY.								
Judge—C. C. Rokeby, Port Rowan.								
H .H. Howell, Cainsville, R.R.1	Reg. Banner....	18	24	7½	19½	20½	89½	
Geo. E. Wood, do R.R. 2	O. A. C. 72....	16½	23	8½	19½	19½	87	
H. Priess, Middleport, R.R. 1	Reg. Banner....	18	23	7½	16½	21	86	15
A. W. Vansickle, Onondaga ..	O. A. C. 72....	17	22	9	16½	21	85½	9
Jas. Pate, Paris, R.R. 4	Banner..........	16½	22	8	18	20	84½	
D. Thompson, Cainsville, R.R. 1	do	16	22	9	17	19½	83½	
D B. Campbell, do R.R. 2	O. A. C. 72.....	16	23	7½	16	19½	82	
M. M. Hunter, do R.R.	do	16	18	9	18½	20	81½	10
A. W. Hamilton, do R.R.2	do	17	19	7½	16½	19½	79½	4, 10
Geo. Thomson, do R.R. 2	Reg. Banner....	16	17	8½	18	20	79½	15, 2
J. R. Robertson, do R.R. 1	do	17	12½	8½	18½	20	76½	5, 10, 1
F. Thomson, do R.R. 1	do	16	12	9	17½	19	73½	2, 10, 15
PARIS AGR. SOCIETY.								
Judge—C. C. Rokeby, Port Rowan.								
J. R. Howell, St. George	Reg. Banner....	17½	22	8½	17	21	86	15
Arthur Howell, do	Banner..........	17½	21½	9	17½	20	85½	15
Fred Luck, Paris	O. A. C. 72.....	17	20	9	19	20	85	15
Geo. Folsetter, do	Banner..........	16½	22½	8½	17½	19½	84½	
J. H. McGill, Princeton	do	17	20½	8½	18½	19½	84	15
J. P. Barker, Paris	O. A. C. 72.....	16	22	8½	18	19	83½	15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
BRANT.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
PARIS AGR. SOCIETY.—*Con.*								
Fred Wells, Paris R.R. 2	**O. A. C. 72**	17	21	8	16½	20	82½	9
Chas. Jarvis, do	**Banner**	15½	21	9	17½	19	82	15, 14
Roy Robb, St. George	**do**	16	21	9	16½	19½	82	15
E. Papple, do	**do**	17½	19	8	16½	20½	81½	15
D. Patton, Paris	O. A. C. 72	15½	20	9	18½	18½	81½	
Bert Gilbert, do	**do**	15	20	8	19½	18	80½	
W. Potruff, do	**do**	16	18	8	19	19½	80½	15
W. Guthrie, do R.R. 2	O. A. C. 72	15½	19	8	17	18½	78	10
E. B. Ronald, St George,	**Lincoln**	16	20	8	16½	19½	78§	15
Geo. Weir, Paris R.R. 2	**Alaska**	16½	22	7	16	18½	78§	15
John Doyle, do	**Banner**	15½	19	8½	16½	18½	78	10
E. Shuert, do	**Granary Filler**	15½	20	8½	17½	18½	78§	15
G. Parkhill, do R.R. 2	**New Century**	15	22	7½	16	18	76½	§15
D. A. Holmes, do	O. A. C. 72	15½	18	7½	17	18½	76½	10, 15
Allan Edgar do	**Banner**	16½	14	9	18	19½	77	2
D. O'Riley, do	**Reg. Banner**	14½	22	8	13½	18	76	
W. Webber, do	O. A. C. 72	16½	12½	7½	18½	19½	74½	2, 9, 15
C. W. Gurney, do	**O. A. C. No. 3**	15½	14	9	17	19½	73§	2, 15
John Blake, do	**O. A. C. 72**	17	10	8	17½	20	72½	12, 4, 10, 15, 9
McLennan Bros. do	**Banner**	15½	14	7½	17	18	72	1, 10
Alex Hall, Ayr.	O. A. C. 72	16½	10	8	18	19	71½	2, 15
H. Nixon, St. George	do	15½	10	9	16½	19	70	1, 15
BRUCE								
ARRAN AND TARA AGR. SOCIETY. *Judge—Geo. Binnie, Priceville, R.R. 2*								
G. P. Kennedy, Tara, R.R. 5	**Banner**	18	23	8½	19	22½	91	1
J. W. Sinclair, Tara, R.R. 2	do	17	24	9	18	22	90	
Jno. E. Dolphin, do R.R. 2	**do**	16	24	8	18	22	88	14
Geo. Angel, do	**do**	17	23	8	17	22	87	2, 14
N. McDougald, do	do	17½	20	8	18	22½	86	1, 2
Jas. Young, Tara, R.R. 5	do	14	24	8	18	20	84	
Geo. Bowes, do	do	17	18	9	18	21	83	1, 14
J. S. Underwood, Pt. Elgin, R.R. 2	do	16	18	9	18	21	82	1, 15
Jno. Hamilton, Tara	do	16	15	8	18	22	79	1, 14, 15
F. J. Scarrow, do	do	16	15	8	18	21	78	15, 1
F. H. King, do R.R. 2	do	14	18	8	18	19	77	1
Jno. W. Bailey, do	do	15	12	8	19	21	75	1, 2
CARRICK AGR. SOCIETY. *Judge—J. A. Kernahan, Maxwell.*								
J. L. Tolton, Walkerton, R.R. 3	**O. A. C. 72**	17½	24	9	20	22	92½	
W. A. Rowand, do R.R. 1	do	19	23½	7	19	23	91½	15
M. Weiler, Formosa,	do	18	24	8	19	22	91	
A. Schmidt, Mildmay	do	17½	22	8½	19	22½	89½	1

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

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BRUCE.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
CARRICK AGR. SOCIETY.—*Con.*								
D. Borho, Formosa, R.R. 1	O. A. C. 72......	17	24	9	17	21	88	15
Geo. B. Armstrong, Teeswater, R.R. 1	Banner..........	17	21	8	18	20	84	1, 15
W. A. Tolton, Walkerton	do	17	16	9	18	21½	81½	1
L. Waechter, Mildmay, R.R. 2	O. A. C. 72......	16	19	7	19	20	81	
Jno. Lints, do	do	17	16	8½	19	20	80½	1
W. G. McLennan, Walkerton, R.R. 4	do	17	12	9	15	20½	73½	1
CHESLEY AGR. SOCIETY.								
Judge—Geo. Binnie, Priceville, R.R. 2								
Robt. Oswald, Chesley, R.R. 2	Siberian........	17	24	9	19	23	90⅚	
W. Thompson, do R.R. 2	Banner..........	17	23	9	18	22	89	
P. McTavish, do R.R. 4	O. A. C. 72......	16	22	7	19	22	86	1, 14, 15
Fred Lowe, do R.R. 3	do	14	24	7	18	21	84	
Robt. Milburn, do R.R. 4	Bumper King...	14	24	7	19	21	83⅚	14, 15
S. K. Ewart, do R.R. 2	O. A. C. 72......	16	22	7	18	19	82	14
Jno. Oswald, do R.R. 2	Siberian.........	14½	22	8	18	20½	81⅚	1
Robt. Sloan, do R.R. 2	O. A. C. 72......	12	23	8	17	13	73	
HEPWORTH AGR. SOCIETY.								
Judge—Robt. Medd, Auburn, R.R. 3								
J. E. Miller, Allenford, ...	O. A. C. 72......	20	23	10	20	24	97	
Geo. Miller, do R.R. 3	Imp. Banner....	19	22	10	20	25	96	
W. H. Sharp, Shallow Lake ..	White Wave.....	20	20	10	20	25	95	
H. Hewitson, Owen Sound, R.R.5	Imp Banner.....	20	22	10	17	25	94	15
F. E. Evans, Allenford, ...	do	20	18	10	20	25	93	1
D. C. Dornan, do	Sheffield Standard	19	17	10	20	25	91	
J. Tomlinson, Hepworth, ...	O. A. C.........	20	25	10	20	15	90	
D. MacDougall, Allenford, R.R.1	Imp. Banner....	19	20	5	20	25	89	
C. A. Barfoot, Shallow Lake ..	White Wave....	20	10	10	20	25	85	1
L. Schnurr, do	W Marvel.......	20	14	10	15	25	84	
Chas. Walker, Hepworth	O. A. C.........	18	15	5	20	25	83	
LUCKNOW AGR. SOCIETY.								
Judge—Jas. McNeil, Maple.								
Jno. McLeod, Lucknow, R.R. 5	Danish..........	17	23	8	20	21½	89½	
Jno. McDiarmid, do R.R. 6	O. A. C.........	16½	24	8	19	20	87½	
K. R. McKenzie, do R.R. 5	do	16	22	9	18	21	86	15
Jno. Webster, do R.R. 2	Improved O. A. C.	16	22	8	19	20	85	
Jas. Baird, do R.R. 3	O. A. C. 72.....	15	20	8	18	21	82	15
H. Rutherford, do R.R. 2	Marvel..........	15	22	8	18	18	81	15
S. Phillips, do	O. A C..........	16½	22	8	16	18	80½	

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OATS.

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BRUCE.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
LUCKNOW AGR. SOCIETY.—*Con.*								
W. A. Wilson, Lucknow	Abundance......	16	22	8	16	18	80	
R. Alton, do R.R. 7	do	14	23	7	19	16	79	
L. Grant, do R.R. 2	Marvel..........	14½	21	8	17	16½	77	
D. K. Alton, do R.R. 7	Abundance......	14	21	8	16	18	77	
W. G. McKenzie, do R.R. 6	O. A. C. 72......	13	20	7	19	17½	76½	15
W. Henderson, do R.R. 3	Lincoln..........	14	19	8	15	19	75	15
Jas. Alton, do R.R. 7	Abundance......	14	20	8	18	14½	74½	15
Jno. McQuillan, do R.R. 1	Gold Medal.....	14½	20	6	16	17½	74	1, 15
Wm. Rutherford, do R.R. 2	Rennie's Early..	16	10	8	15	21	70	1
K. McDonald, do R.R. 6	Banner..........	13½	17	7	15	17½	70	
NORTH BRUCE AND SAUGEEN AGR. SOCIETY.								
Judge—J. C. Duff, Tara.								
J. Baker, Port Elgin......	Green Mountain.	18	24	9	19	22½	90½	8
F. W. Elliot, do	O. A. C. 72......	15½	24½	9	18	22	89	
W. J. Pierson, do	do	16½	20	9	18	23	86½	15, 10
Alex. Lamont, do	do	15½	22	8	17	23	85½	
Alex. Geddes, do	do	15	21	8	17	22½	83½	
J. Witting, do	do	15½	23	6	17	20½	82	
W. S. Airth, North Bruce	do	15	22	7	17	20½	81½	
Jno. Wallace, Port Elgin......	do	14	22	7	17	19	79	
N. B. Snyder, do	Green Mountain.	14	21	7	17½	20	77½	8
J. W. Anderson, do	O. A. C. 72......	14	19	8	17	19	77	15
Jas. Clazie, do	do	14½	10	8	18	21	71½	1
PINKERTON AGR. SOCIETY.								
Judge—Geo. Binnie, Priceville, R.R. 2								
Ed. Tolton, Walkerton, R.R. 3..	O. A. C. 72.....	18	24	9	19	23	93	
H. G. Clark, Paisley R.R. 2....	do	17	24	9	19	22½	91½	14, 15
W. J. Cruickshank, Pinkerton..	do	18	24	8	19	22	91	
H. H. Young & Sons, Eden Grove, R.R. 2	Banner..........	14	24	8	18	26	90	14, 15
Jno. Holm, Walkerton, R.R. 4..	O. A. C. 72......	16½	20	9	19	22½	87	1, 14
Jno. Mutrie, Pinkerton	do	15	23	9	17	22	86	15, 14
Garland Bros. do R.R. 1	do	16	20	8	19	22	85	1, 14, 15
Robt. Perdue, Eden Grove	do	15	23	8	17	21	84	14, 15
A. Alexander, Pinkerton, R.R. 1	Banner..........	16	20	8	18	21	83	14, 15
J. A. Garland, Carghill	O. A. C. 72......	16	20	8	18	20	82	2, 12
D. Pinkerton, Pinkerton	do	15	18	7	19	22	81	1, 2, 14
TEESWATER AGR. SOCIETY.								
Judge—Geo. Binnie, Priceville, R.R. 2								
Alex McKague, Teeswater, R.R.1	O. A. C. 72....	18	24	9	19	23	93	
J. D. Little, do	do	17½	24	8	19	23½	92	1
J. S. Armstrong, Formosa	do	16	24	9	19	23	91	15

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OATS.

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BRUCE.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
TEESWATER AGR. SOCIETY.—*Con.*								
T. A. Goodfellow, Teeswater, R.R. 1	O. A. C. 72	17½	24	8	19	22	90½	14
T. B. Aitken, Teeswater	do	17	23	8	19	23	90	15, 1
D. McDonald, do	do	16	24	8	19	22	89	15
Thos. Moffat, do	do	16	24	8	17	22	87	14, 15
Robt. Keith, do	do	16	24	7	18	21	86	14, 15
K. McKenzie, do	do	14	24	8	18	21	85	15
W. G. Moffat, do R.R. 3	Siberian	15	20	9	19	21	82⅔	14, 15, 1
R. B. Scott, do	do	16	21	8	16	22	81⅔	1, 15
UNDERWOOD AGR. SOCIETY.								
Judge—J. C. Duff, Tara.								
Carl Kopas, Tiverton, R.R. 3	O. A. C. 72	17½	22	8	18	21½	87	
Chas. Drummond, N. Bruce, R.R. 1	do	16½	24	7½	18	20½	86½	15
C. Nicholson, N. Bruce, R.R. 1	do	16½	24	7	18	20½	86	
Robt. Carleton, Tiverton, R.R. 3	do	16½	22	7	18	20	83½	
Jos. Howe, Paisley, R.R. 4	do	14	23	8	18	20	83	15
J. W. Johnston, North Bruce, R.R. 1		14	23	6	17	22	80⅔	
G. H. McKay, Tiverton, R.R. 3	O. A. C. 72	14	23	8	17	17	79	
Jas. Avis, do R.R. 3	do	14	21	6	17	18	76	15
W. McKay, do R.R. 3	do	16½	10	7	18	21½	73	2, 10, 14, 15
J. W. Kippen, do R.R. 3	Am. Banner	16½	10	8	17	20	71½	2, 14
WIARTON AGR. SOCIETY.								
Judge—Robt. Medd, Auburn, R.R. 3								
H. F. Loney, Wiarton, R.R. 2		20	22	10	20	25	97	
Wm. Lembke, do R.R. 2	O. A. C. 72	20	20	10	20	25	95	
E. J, Loney, Oxenden	Banner	20	22	10	17	25	94	
A. Lambke, Wiarton, R.R. 2		20	20	10	15	25	90	15
D. W. Porter, do R.R. 2	O. A. C. 72	20	20	8	20	20	88	15
F. N. Stephen, do R.R. 2	Garter King	18	18	10	15	25	86	5, 15, 1
A. B. Loney, do R.R. 2	O. A. C. 72	15	20	10	20	20	85	
B. H. Beacock, do R.R. 2	Banner	20	16	5	18	25	84	1, 15
C. W. Loney, do R.R. 2	Reg. Banner	15	15	5	20	25	80	1
CARLETON.								
CARP AGR. SOCIETY.								
Judge—J. N. Sorley, Ottawa, R.R. 1								
G. H. Caldwell, Carp	Banner	18½	24	6½	20	21½	90½	
H. L. Black, Stittsville	O A. C. 72	16½	15	6	16	20	73½	2, 1
F. S. Caldwell, Carp	Banner	17	10	6	19	19½	71½	5, 15

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OATS.

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CARLETON.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
FITZROY AGR. SOCIETY.								
Judge—Peter Wilson, Cobden, R.R. 3								
F. R. Gourlay, Kinbun	O. A. C. 72	18	22	8	18	23	89	
R. G. Gillan, Pakenham	Banner	17	22	8½	17	23	87½	10.15
L. Stewart, Arnprior, Box 332	O. A. C. 72	18	21	7½	17½	22	86	10.4.15
H. Miller, Galetta		16½	24	8	18	18½	85	15
A. M. Tait, do	O. A. C. 72	16½	18	9	19	22	84½	13
Jas. Armstrong, Kinburn	Banner	15½	16	8	18	22	79½	10
J. L. Hunt, Galetta	O. A. C. 72	16	16	8	16	23	79	10
H. E. Miller, Arnprior	Imperial	17	15	7	17	21½	77½	2
A. J. Halpenny, Galetta		14	15	8	15	19	71	
A. L. Riddell, do	Banner	13	15	8	15	19	70	4
METCALFE AGR. SOCIETY.								
Judge—J. N. Sorley, Ottawa, R.R. 1.								
R. & J. Woods, Metcalfe	Banner	12½	22	8½	19½	18½	80½	15
Ben Acres, Vernon	do	14	20	6	18	18	76	2,15
P. Anderson, Kenmore	do	13	17	8	16	18½	72½	2.15
DUFFERIN.								
DUFFERIN AGR. SOCIETY.								
Judge—R. E. Mortimer, Honeywood.								
W. H. Gillespie, Orangeville, R.R.3	O. A. C. 72	18	20	8	17½	21	84½	10,15
J. H. Jackson, do R.R.1	Banner	16½	20	9	18	17	80½	15
S. C. W. Hughson, do R.R.2	Early Cluster	15	20	8	15	17	75	15
W. H. Hunter, do R.R.2	Boanza	14½	20	7	16	13½	71	14,10
DUFFERIN CENTRAL AGR. SOCIETY.								
Judge—A. Forster, Markham.								
Archie Greer, Mansfield, R.R. 1	Early Derby	18	21½	9¾	19¾	21¼	88¼	81
J.A.Marshall, Mono Centre, R.R. 1	Sterling	17	23	9	17½	21	85½	815
J.L.Richardson, Shelburne, R.R. 1	Great Dane	17¼	21	9½	19½	19¾	858	2,15
Jno. Smith, Horning's Mills, R.R.1	O. A. C. 72	19	9½	9¾	19½	22¾	80½	2,15
Geo. E Foster, Honeywood, R.R.1	O. A. C. 72	17¾	9	9½	19½	22	77¾	1,2,15
W. J. Hamilton, Shelburne, R.R.5	Banner	18¾	8	9½	18	22¾	77	2
J. H. McKee, Shelburne, R.R. 4	O. A. C. 72	17¼	8	9¾	19½	21	75½	1,10,15,14
A. Hamilton, do R.R. 3	Early Yielder	18¼	9	9½	19	21½	75¼	81,15
Geo. Best, Shelburne	O. A. C. 72	16¾	9¾	9	18½	21	75	1,15
Geo. Prentice, Horning's Mills	O. A. C. 72	17	10	9	17½	20¾	74¼	1,15,7
Rice Hill, Shelburne, R.R. 4	E. Daubeny	16½	9½	9¾	19	20¾	73½	81.15
R.E. Mortimer, Honeywood, R.R.4	Marguerite	16¼	10½	9¾	18½	20¼	73¼	82,10,15
J. G. Richardson, Shelburne, R.R.1	White Wave	17¼	9	9½	18	20¾	72½	8

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
DUFFERIN.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
EAST LUTHER AGR. SOCIETY.								
Judge—A. Forster, Markham.								
Geo. Park, Arthur, R.R. 2	O. A. C. 72	18¾	24¾	9½	19¾	21¾	94½	14
W. E. Turner, Grand Valley, R.R.3	do	18¾	19½	9½	19½	21	88¼	2
G. M. Richardson, do R.R.3	do	17¼	11	9	19	20½	76¾	2,1
H. Berry & Sons, do R.R.3	Am. Banner	17¾	9¾	9½	18½	21	76½	1,14
Colbeck Bros., do R.R.2	Banner	15½	12	9½	19	19¾	75¾	2,1,10.15
Wm. Park, Belwood, R.R. 3	O. A. C. 72	17	10	9	19¼	20¼	75½	2,15
Wm. Curtis, do R.R. 3	do	16¾	8	9¾	19½	20¼	74¼	2,1
J. A. McCulloch, Grand Valley	Prince Royal	17¼	10	9	19¼	20½	74§	
A. Campbell, Grand Valley, R.R.3	Abundance	17½	9¾	9	19	20¼	73½	§2,14
Wm. J. Crane, do	do	15½	13	8½	18½	19¾	73¼	§2,15
Robt. Fuller, do R.R.3	Granary Filler	17½	8	8½	19¼	20½	71¾	§2,15,14
R. H. Wansbrough, Laurel	Prince Royal	15	12	9	17¾	19¾	71½	§2,14,15
DUNDAS.								
MOUNTAIN AGR. SOCIETY.								
Judge—J. D. McLennan, Lancaster.								
Jas. H. Higginson, Inkerman	White Wave	19	23	8	20	23	93	
C. Collison, S. Mountain	do	18½	24½	7	20	22	92	
R. K. Graham, do	Danish Island	16	20	9	19	24	88	
Thos. Carlyle, Osgoode, R.R. 4	O. A. C. 72	17	22	9	17	22	87	
S. D. Thorpe, S. Mountain	Banner	16½	20	8	19	22	85½	15
Mellan Bros., do	O. A. C. 72	11	20	6	19	22	83	10
Wm. G. Timmins, Inkerman	White Wave	14	23	8	17	18½	80½	
R. Mulholland, S. Mountain	Newmarket	12	20	8	18	21	79	
Geo. P. Timmins, Inkerman	White Wave	16	22	7	10	19	74	
W. T. Biggs, S. Mountain	O. A. C. 72	14	21	5	15	16½	71½	
DURHAM.								
CARTWRIGHT AGR. SOCIETY.								
Judge—D. J. Gibson, Bowmanville.								
J. G. Marlow, Burketon Stn.	Prince Royal	17½	22	8	19	22½	89	
N. H. Marlow, do R.R. 1	do	17	20	8	19	22	86	4
L. E. Mountjoy, do	Irish	16	23	7½	18	21	85½	15
W. C. Ferguson, Blackstock	O. A. C. 72	16	19	9	19	22	85	1
R. Nesbitt, Nestleton	do	14	23	8	18	21	84	15
S. McLaughlin, do	Granary Filler	16½	20	8	17	22	83½	4
J. M. English, Burketon	Industrial	14	22	7½	19	20	82½	15
Fred Taylor, Nestleton	Prince Royal	13	23	8	18	19	81	
Jno. Mountjoy, do R.R. 2	do	13½	21	7	18	20½	80	15
F. F. Willan, Blackstock	Industrial	13½	20	7	19	20	79½	10
A. Henry, Burketon	do	13½	22	6	19	17	77½	15
S. H. Malcolm, Nestleton	O. A. C. 72	14	17	8	17	21	77	4

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OATS.

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DURHAM.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
MILLBROOK AGR. SOCIETY.								
Judge—J. J. Virtue, Hampton.								
T. A. Kelly, Millbrook, R.R. 1	O. A. C. 72	18	24	8	19	22½	91½	15
R. O. Larmer, do	Banner	17	22	9	19	23½	90½	15, 10
Robt. McCamus, Ida	O. A. C. 72	16	24	9	19	22	90	15
A. J. Henderson, Millbrook	do	15½	23	8	20	20	86½	
L. H. Winslow, Ida	Banner	14½	24	8	19	20	85½	15
Fred Anderson, S. Monaghan ..	do	16	23	8	17	20	84	
L. Fallis, Millbrook, R.R. 3....	O. A. C. 72	16	22	6	19	19½	82½	10
Wesley Brown, do R.R. 3....	do	14	22	8	19	18½	81½	10, 15
L. W. Smith, do	Banner	13½	23	7	16	19½	79	
A. Sutton, do	O. A. C. 72	14	15	8	15	20	72	1, 15
H. A. Fallis, do R.R. 3....	Banner	15	16	2	18	19½	70½	15, 11, 1, 10
PORT HOPE AGR. SOCIETY.								
Judge—D. J. Gibson, Bowmanville.								
Barrie Bros., Port Hope, R.R. 4	Sensation	15	23	9	18	21	86	15
Misses Harvey & Martin, Port Hope	Banner	16	20	8	17	21	82	4, 10
Wm. Lingard, Port Hope, R.R. 3	Irish	15	17	8	19	22	81	4, 1
Thos. Coyte, do	Imp. Banner	16	19	8	16	21	80	4, 1
R. L. Holdsworth & Son, Port Hope, R.R. 3	O. A. C..........	14	18	7	19	21	79	4
Wm. Westington, Cobourg, R.R. 4	Irish	15	14	7	18	24	78	10
H. A. Holdsworth, do R.R. 4	Abundance	13	14	9	18	19	73	4, 10
Wm. Berry, Port Hope, R.R. 1..	Reg. Banner	13	15	7	16	20	71	4, 1
W. J. Crowhurst, do R.R. 2..	Banner	14	15	7	15	19	70	7, 4, 1
WEST DURHAM AGR. SOCIETY.								
Judge—H. R. Blakely, Eldorado, R.R. 1.								
L. T. Pascoe, Hampton	O. A. C. 72	16	23	8	20	22	89	
J. F. Osborne, Newcastle	Granary Filler ..	15½	22	8	19	22	86½	4
A. W. Annis, Tyrone	O. A. C. 72	15½	22	7½	19	21	85	10, 15
S. E. Werry, Hampton	do	15½	18½	7	20	21½	82½	1
J. Baker, do R.R. 1....	do	15½	22½	7½	18	18½	82	10
W. J. Bragg, Bowmanville, R.R. 4	do	15½	20	7½	18	20½	81½	11
S. C. Allen, do	do	16	20	7	19	19	81	
A. L. Pascoe, Hampton, R.R. 1..	do	15½	18	6½	18	21	79	1
Jas. Leask & Son, Taunton	do	12½	20	7	18	19½	77	
ELGIN.								
ALDBOROUGH AGR. SOCIETY.								
Judge—C. C. Rokeby, Port Rowan.								
J. A. King & Son, Wardsville...	O. A. C. 72	17	22	9	19½	20	87½	
D. Purcell & Son, do ...	do	16	22½	9	17	19	83½	
W. J. Kelly, Rodney	do	16½	20	9	17	20½	83	

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OATS.

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ELGIN.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
ALDBOROUGH AGR. SOCIETY.—*Con.*								
W. W. Havens, Rodney	O. A. C. 72	16½	20½	8	17½	20	82½	
J. Hesenauer, do	do	16½	20	7½	18½	19½	82	
W. Kelly, do	Sensation	17	21	9	16	20½	81½	8
Wm. A. Kelly, do	O. A. C. 72	16	19	7½	19	19½	81	
Jas. Downie, do	do	15½	18½	7½	19½	19	80	
H. Kentch, do	do	16½	20	7½	17	18½	79½	
A. E. Purcell, do	do	15	20	7½	19½	17½	79½	9
B. Partridge, West Lorne	Banner	15½	20	8	16½	18	78	
F. McGregor, Wardsville	O. A. C. 72	14	19	8	19½	17½	78	12
Arthur Purcell, do	Abundance	15	20	9	16½	19	77½	8
R. A. Kerr, Rodney	O. A. C. 72	16½	15	8	16½	20½	76½	5
D. Carmichael, West Lorne	do	13½	20	8	19½	15½	76½	
Jno. Sticker, Rodney	Am. Wonder	16	18	9	16	19½	76½	8
Arch. McColl, do	O. A. C. 72	16	19	6½	16½	18½	76½	
A. Winger, Wardsville	Banner	17	15	7½	17	20	76½	5
Jas. A. Kelly, Rodney	O. A. C. 72	14½	18	8	16½	18½	75½	
A. J. Leitch, Wardsville	Am. Wonder	14½	18	8½	15½	18½	73	8 15
W. Turk, do	do	15½	18	8	15	18	72½	8 14, 15
W. Campbell & Son, Wardsville	Banner	13½	18	9	15	17	72½	15, 14
STRAFFORDVILLE AGR. SOCIETY.								
Judge—Jas. Pullin, Woodstock, R.R. 1.								
W. F. Pound, Aylmer, R.R. 1	Banner	16	22	8	18	22	86	
Wm. Abell, do R.R. 1	O. A. C. 72	16	22	7	19	20	84	
E. Sitts, do R.R. 1	do	10	20	4	18	18	70	
WEST ELGIN AGR. SOCIETY.								
Judge—Jas. Pullin, Woodstock, R.R. 1.								
E. V. Docker, Wallacetown, R.R. 2	O. A. C. 72	16	23	8	19	22	88	
S. M. Pearce, Fingal, R.R. 1	do	16	23	8	18	22	87	
W. S. Pearce, Wallacetown, R.R. 2	Banner	16	23	8	16	21	84	
S. L. Pearce, do	do	15	20	6	16	21	78	
R. G. Garbutt, do R.R. 1	O. A. C. 72	13	20	6	18	20	77	
E. H. Pearce, do	do	13	20	5	16	17	71	
ESSEX.								
AMHERSTBURG, ANDERDON AND MALDEN AGR. SOCIETY.								
Judge—R. H. Abraham, Chatham, R.R. 1.								
Fred Pettypiece, Auld	O. A. C. 72	19¼	24½	9½	19½	24¾	97½	
D. E. Bondy, N. Malden, R.R. 1	New Zealand	19	24½	9½	19½	24½	97	
E. Langlois, Amherstburg	O. A. C. 72	19¼	24	9½	19¾	23½	96	
E. A. Deneau, N. Malden, R.R. 1	do	18½	24¾	9	19	24	95¼	

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ESSEX.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
AMHERSTBURG, ANDERSON AND MALDON AGR. SOCIETY.—*Con.*								
Thos. Deslippe, Amherstburg ..	O. A. C. 72	18½	24½	9½	19	23½	95	
J. Martin, do R.R. 2	do	16	23	9	19	22	89	
R. Langlois, do ..	do	16	23	9	17	22	87	
W. C. Anderson, do ..	do	16	19	9	19½	21	84½	
C. Mickle, do ..	do	16	23	8	19	17	83	
FRONTENAC.								
KINGSTON IND. AGR. SOCIETY.								
Judge—W. Hickson, Bobcaygeon.								
A. C. Day, Portsmouth	O. A. C. 72	17½	23	5	19	20	84½	14
Cooke Bros., Cataraqui	do	18½	20	8	16	21½	84	4, 10
Wm. Gordon, Kingston, R.R. 1..	do	17½	20	7	19	20¼	83¾	15
Jas. B. Baxter, do R.R. 1..	do	16½	21	6	20	20	83½	10
H. R. Clark, Collins Bay........	O. A. C. 72......	15	23	7	20	17½	82½	10
J. L. F. Sproule, Westbrook....	do	15	21	6	19	18½	79½	10, 4
W. J. Hunter, Kingston Mills...	do	13½	20	5	18	19	75½	14
J. S. Sibbit, do. R.R. 1	do	15	16	6	19	17	73	4
W. S. Greer, Portsmouth, R.R...	do	13	18	5½	18	18	72½	4, 15, 14
J. S. Yoemans, Collins Bay.....	do	12	21	4	20	15	72	10
Colin Rodgers, Kingston, R.R. 1	do	14	16	5	20	15	70	10
WOLFE ISLAND AGR. SOCIETY.								
Judge—W. Hickson, Bobcaygeon.								
Wm. Allum, Wolfe Island, R.R. 4	O. A. C. 72......	16½	23	6	20	19½	85	
M. L. Wiggins do R.R. 2	Banner	18	20	5	20	21½	84½	10
Geo. McCready, do R.R. 2	do	17½	21	5	19	21	83½	10
H. McCready, do R.R. 2	do	17½	22	5	19½	18	82	
Jas. Grant, do R.R. 2	do	16½	21	6	17½	19½	80½	10
Jno. W. Keyes, do R.R. 2	do	18	21	4	18	19	80	4, 14
Geo. Rodgers, do	O. A. C. 72......	14	21	5	20	19	79	14, 10
Henry J. Hall, do	Banner	16½	22	4	17	19	78½	
Wm. G. Kemp, do R.R. 2	O. A. C. 72......	15	19	6	19	19	78	14
Saml. J. Woodman, do R.R. 1	Kitchener........	14½	15	7½	18	18½	73½	15, 14
Geo. Friend, do R.R. 4	Cluster..........	12	20	5	19	17	73	4
Jno. Hall, do	Banner	19	15	4	15	19	72	
Wm. Ranous, do R.R. 1	do	16	15	7	15	17	70	10, 4
GLENGARRY.								
KENYON AGR. SOCIETY.								
Judge—Robt. Greer, Morrisburg.								
F. K. McLeod, Dunvegan.......	New Century.....	17	24	10	19	23½	93½	
Wm. F. Campbell, Athol	Banner	19½	19	10	20	24½	93	
Chas. Blaney, Maxville	do	18½	24	7	19	24	92½	

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OATS.

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GLENGARRY.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
KENYON AGR. SOCIETY.—*Con.*								
Thos. Blaney, Maxville	Siberian	18	21	10	20	22½	91½	10
Jas. Vallance, do R.R. 2	do	20	15	10	20	25	90	
A. A. McLeod, Dunvegan, R.R. 1	Banner	19	12	10	20	25	86	
Jno. Kennedy, Maxville,	Siberian	17	15	10	20	23	85	
A. J. McLeod, Dunvegan	Banner	19½	10	10	20	24	83½	4, 13
N. Campbell, Moose Creek, R.R. 1	do	17	10	10	20	25	82	
J. J. Campbell, Athol	do	17½	10	10	20	23	80½	
ST. LAWRENCE VALLEY AGR. SOCIETY.								
Judge—Robt. Greer, Morrisburg.								
F. Robinson, Williamstown	O. A. C. 72	20	23	9	20	25	97	
J. J. Dingwall, do	Banner	17	25	10	19	24	95	
Thos. Munroe, Lancaster	do	20	20	10	20	24	94	
P. B. Snider, Bainsville	O. A. C.	19	20	10	20	24	93	
Wm. Mitchell, do	Siberian	20	20	9½	20	25	92½	§
J. P. Snyder, do	Early Angus	20	20	9	20	25	92§	
James Fife, Martintown	Banner	18	20	9	20	24	91	15, 3
J. D. Maclennan, Lancaster	Great Dane	18½	20	8	20	25	89½	§
J. H. Goodfellow, do	Banner	20	15½	10	18	25	88½	
Wm. Clark, do	do	20	15	9	20	24	88	10
Jos. Goodfellow, do	Irish	18	15	10	19	25	85§	15, 4
J. McNaughton, Williamstown	Scottish Chief	18	20	10	18	20	84§	
P. S. Snider, Bainsville	Early Angus	19	10	9	20	24	80§	
Wm. Wightman, Lancaster	Banner	15½	15	8½	20	18½	77½	15, 4
A. A. Maclennan, do	do	9½	10	9	20	23	71	
GREY.								
DESBORO AGR. SOCIETY.								
Judge—Wm. Hudd, Orangeville.								
Ed. Carson, Desboro	O. A. C. 72	18½	22½	8	19	24½	92½	
A. A. Klagus, Marion, R.R. 1	do	18½	23	8½	17	24	91	
S. S. Bryans, Chatsworth, R.R. 3	New Zealand	19½	21	9	18	24½	90§	10
C. Bluhm, do R.R. 2	O. A. C. 72	18	19	8	18	25	88	
Jos. Bryans, Desboro	do	19	17	8	18	24	86	15
R. McGregor, do	do	18	16	9	19	23½	85½	10, 15
Jno. Golem, Chesley	O. A. C. 72	17	17½	7½	18	23½	83½	15, 1
J. S. Lembke, Chesley, R.R. 4	Abundance	17½	19	8½	18½	21½	83§	15
A. Dow, Dobbington	Irish	16	17	8½	16	25	80½	§
W. Proud, Desboro	Banner	15	20	7	17	21	80	15
R. McClelland, Marmion, R.R. 1	Granary Filler	17	15	8	15	23	76§	10
L. Mannerow, Desboro	O. A. C. 72	14	18	6	17	20	75	15
Chas. Teschke, Chesley, R.R. 4	Banner	13	17	7	16	21	74	15
S. Wilde, Desboro		14	18½	8	15	19½	73§	15

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GREY.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
EAST GREY AGR. SOCIETY.								
Judge—Wm. Hudd, Orangeville.								
R. Swanton, Flesherton, R.R. 2	O. A. C. 72	18	24	9	19	23	93	
Robt. Chard, Proton, R.R. 3	do	18	24	10	18	22½	92½	
Wm. Patton, Priceville	do	18½	23	9	19	22	91½	15
A. Johnston, Flesherton, R.R. 2	Rennie's E. Yielder	18½	23	8½	18½	24	90½	2
A. Harrison, Proton, R.R. 3	O. A. C. 72	19	18	9½	20	23½	90	
T. J. Stinson, do R.R. 3	Banner	18½	22	9	18	22	89½	
D. McTavish, Flesherton	O. A. C. 72	17½	21	8	19	23½	89	15
M. G. Orr, Proton	do	18	21	8½	19	21½	88	
W. J. Stewart, Flesherton	French	18	18	8	19	24	85½	1
L. A. Fisher, do	O. A. C. 72	18	19½	9	18½	21	86	10
Mark Wilson do	do	16½	20	8	19	21	84½	15
HOLLAND AGR. SOCIETY.								
Judge—Wm. Hudd, Orangeville.								
A. Kemp, Chatsworth, R.R. 4	O. A. C. 72	19	24½	10	20	23	96½	
Geo. Milson, do R.R. 3	Banner	20	23½	8	19½	25	96	
Jno. McKenzie, do R.R. 3	O. A. C. 72	19½	21½	9	20	25	95	
Jas. McDonald, do R.R. 3	do	18½	21	9	19	25	92½	1
M. Cameron, Owen Sound, R.R. 4	do	17	24	8	19	23	91	
Thos. McCauley, do R.R. 4	do	17½	22	9	19	23	90½	
E. P. Hammel, Chatsworth, R.R. 4	Banner	18	20	8½	20	23	89½	
Thos. McDonald, do	Sensation	17½	20	9	18½	24	87½	
R. T. McComb, do R.R. 1	O. A. C. 72	16½	19	7½	16	22	81	15
W. J. Bryons, do R.R. 3	New Zealand	16	20	8	18	19½	79½	21
S. H. Breese, do	O. A. C. 72	16	15	9	19	20	79	15
KEPPEL AGR. SOCIETY.								
Judge—Arch. Greer, Mansfield. R.R. 1.								
Homer Hurlbut, Kemble, R.R. 2	Derby	17½	24	8	19	22½	91	
M. Bedell, do	Peerless	18	25	8	18	19	88	
A. Taylor, do	O. A. C. 72	16½	21	7	14	20	78½	14
Douglas Davidson, do	do	15½	20	7	17	17	76½	1, 14
F. Davidson, do R.R. 1	Sterling	16½	18	7	17	17	75½	1, 10
Chas. Garvie, do R.R. 2	Prince Royal	13	20	7	18	16½	74½	14, 15
Jno. Taylor do R.R. 1	Northland	13½	22	7	15	16	73½	15
Geo. McKenzie, do R.R. 1	Lincoln	15½	15	8	16	17	71½	1, 14
KILSYTH AGR. SOCIETY.								
Judge—Arch. Greer, Mansfield, R.R. 1.								
E. H. Coulter, Owen Sound, R.R. 3	Banner	17½	23	9	19	21½	90	
A. S. Donald, Tara, R.R. 5	do	17½	24	8	19	20½	19	15
A. Fleming, do R.R. 5	do	16	24	8	19	19	86	
V. Barber, Owen Sound, R.R. 4	do	17	21	8	18	20	84	15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
GREY.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
KILSYTH AGR. SOCIETY.—*Con.*								
D. T. Waddell, Kilsyth	Iowa S. Mine	16½	22	8	18	18½	83	15
Geo. A. Sargeant, Owen Sound	O. A. C. 72	16½	20	5	19	18	78½	15, 13
B. Porteous, do R.R. 3	Banner	16½	15	8	18	20	77½	1, 15
Robt. S. Mundle, do R.R. 3	O. A. C. 72	13½	22	6	17	16½	75	15
W. E. Fleming, Tara, R.R. 5	do	15½	18	8	16	17	74½	1, 15
W. J. Beckett, O'en Sound, R.R. 4	do	14	20	8	14	17	73	11, 15
Wm. Breen, Tara, R.R. 5	Banner	13	21	7	16	15	72	14, 15
R. Jones, do R.R. 5	Granary Filler	13	14	9	16	18	70	1, 15, 14
MARKDALE AGR. SOCIETY.								
Judge—Wm. Hudd, Orangeville.								
Jas. Buchanan, Flesherton, R.R 2	O. A. C. 72	18	22	9½	19½	25	94	1
Earl Davis, Markdale, R.R. 4	do	19	24½	8½	19	21½	92½	
Jas. Findlay, do	do	18	22½	8½	19½	23½	92	1
Fred. Boland, do	Banner	17	25	9	19	21	91	
D. Foster, do R.R. 4	O. A. C. 72	19	21½	9	19	22	90½	1
E. & James McLoughry, Markdale, R.R. 4	do	17	24	9	18	22	90	
A. Tolton, Markdale, R.R. 5	Derby	17	24	9	19	22	89⅔	
Wm. McLoughry, do R.R. 4	O. A. C. 72	16	22	9	18½	21½	87	
T. S. Mercer, do	do	17½	20	8½	18	22½	86½	1, 15
J. A. Halbert, do R.R. 3	O. A. C. 72	16½	21	10	18	20	85½	15
A. D. Irwin, do R.R. 5	Derby	16	21	9	19	21	84⅔	
MEAFORD AND ST. VINCENT AGR. SOCIETY.								
Judge—Jas. McNeil, Maple.								
Wm. Pollock, Meaford, R.R. 2	Yel. Russian	16½	24	8	17	20½	86	
Jos. Hartman, Rocklyn, R.R. 2	Banner	18	21	7	17	21	84	15
Geo. M. Shields, Walter's Falls, R.R. 1	Danish	16½	23	6	16	18	79½	15
J. E. Lougheed, Meaford, R.R. 2	Banner	15½	20	7	16	20	78½	15
R. A. Loucks, Rocklyn, R.R. 2	do	16½	19	7	16	19	77½	15
C. R. Shields, Meaford, R.R. 1	Danish	13½	21	6	16	17½	74	
J. W. King, do R.R. 1	O. A. C. 72	14	16	7	17	18	72	4, 15
E. Martin, Rocklyn, R.R. 2	Scottish Hero	14	20	7	14	16½	71½	15
M. M. Brown, Meaford, R.R. 1	Banner	16	12	7	15	20	70	1, 15
NORMANBY AGR. SOCIETY.								
Judge—R. J. Hall, Shelburne, R.R. 2.								
J. Allensen, Neustadt	O. A. C. 72	16	25	8	19	21	89	
Chas. Holm, Ayton	Sterling	16	25	8	17	21	87	
Jno. Goessel, do	M. Cluster	15	25	7	17	21	85	
L. Wolfe, Neustadt	O. A. C. 72	15	24	8	17	19	83	
Jno. Bickle, Mildmay, R.R. 4	do	17	15½	9	19	22	82½	1
Jas. Booth, Ayton	Sterling	13	25	7	15	21	81	
Henry Hill, do R.R. 1	Danish Island	15	19	9	15	21	79	1

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
GREY.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
NORMANBY AGR. SOCIETY.—*Con.*								
A. Huehn, Neustadt, R.R. 1	O. A. C. 72	13	21	8	17	19	78	
H. Dietz, Ayton, R.R. 1	M. Cluster	13	22	7	15	20	77	
Wm. Marshall, Neustadt, R.R. 1	Banner	14	15½	8	16	20	73½	
J. W. Hellwig, Carlsruhe, R.R. 1	Danish Islander	13	14	8	19	19	73	1
OSPREY AGR. SOCIETY.								
Judge—J. C. Duff, Tara.								
J. A. Kernahan, Maxwell	O. A. C. 72	17½	24½	9	19	23¾	93½	
W. H. Hall, do	$1,000	17	24½	9	19	22½	90§	
Angus Morrison, do	$1,000	15½	24½	8	19	21½	86½	§
E. Hawton, Feversham	O. A. C. 72	16	24	8	18	20	86	15
Geo. McDonald, McIntyre	Granary Filler	16	22	8	18	21	83§	1
L. W. Kerton, Maxwell	Early Yielder	16½	19½	8	18	22	82§	1
Jos. Alliston, do	O. A. C. 72	17½	10	9	19	22½	78	
Jno. Moffat, Eugenia	$1,000	16	15	8	17	20	74§	
G. H. Burke, do	$1,000	16½	10	8	18	21	71½	§2, 10
PROTON AGR. SOCIETY.								
Judge—J. C. Duff, Tara.								
E. J. Cronin & Son, Riverview, R.R. 1	Yel. Russian	18½	25	9	19	23	92½	§
Thos. Walton, Dundalk, R.R. 1	O. A. C. 72	18½	22	9	19	23	91½	
R. Lonsway, Corbetton	Sensation	18½	20	9	19	23	87½	§
Jos. Coulter, Dundalk, R.R. 1	Dewdrop	18	20	9	19	22½	86½	§
W. H. Russell, do R.R. 4	Yel. Russian	18	18	9	19	22½	84½	§
P. J. Fernan & Sons, Dundalk, R.R. 2	$1,000	15	24	8	19	19½	83½	§
T. Elliot, Corbetton, R.R. 3	Ligowa	17	17	8	19	21	80§	
R. J. Corneth, Dundalk, R.R. 4	Sensation	16	17	8	19	21	79§	
J. W. Hanna, do R.R. 2	New Industrial	15	15	8	18	21	75§	
J. A. Russell, do R.R. 4	Ligowa	15	17	8	18	21	77§	
R. N. Fowler & Sons, Dundalk, R.R. 2	$1,000	14½	15	8	18	20	73½	§
Geo. Bell & Sons, Corbetton, R.R. 3	Am. Banner	14½	15	6½	17	20	73	
J. J. Cronin, Cedarville	Sensation	14½	14	8	17	20	71½	§
M. Lonsway, Corbetton, R.R. 3	do	14½	14	7	17	20	70½	§
ROCKLYN AGR. SOCIETY.								
Judge—Geo. W. Glover, Nottawa.								
C. F. Fisher, Meaford, R.R. 4	Banner	13½	21½	10	19½	21	85½	1
W. H. Sewell, Blantyre	O. A. C. 72	17¾	9¾	10	19¾	23½	80¾	1
Jno. Yeadell, Rocklyn, R.R. 2	do	16¾	9½	9¾	19¾	23½	79¼	1, 14
M. E. Abercrombie, Meaford, R.R. 4	do	15¾	9½	10	20	22	76¼	1, 14
W. Thomson, do R.R. 4	do	15¼	9½	10	19¾	22	76½	1
J. A. Perry, do R.R. 4	Reg. Banner	13½	9¾	10	19¾	21	74	1
Jno. McKnight, do R.R. 4	Banner	13½	9½	10	19¾	21	73¾	1
Wm. Langtree, do R.R. 4	do	15¼	9	10	17¼	22	73½	1, 14
G. L. Sewell, do R.R. 4	do	13½	9½	10	20	20½	73½	1

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

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GREY.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
ROCKLYN AGR. SOCIETY.—*Con.*								
W. R. Perry, Rocklyn	O. A. C. 72......	13½	9½	10	19	21	73	14, 1
T. Langtree, Meaford, R.R. 4..	Reg. Banner.....	12¾	9½	10	19½	20½	72¼	1, 14
W. Patton, Rocklyn	O. A. C. 72......	12	10	9¾	19¾	20	71½	1
SOUTH GREY AGR. SOCIETY.								
Judge—R. J. Hall, Shelburne, R.R. 2.								
J. A. Dixon, Varney, R.R. 1....	Banner..........	17	25	8	19	22	91	
A. Edge, do R.R. 1.....	O. A. C. 72......	17	24	8	19	21½	89½	
Jas. B. Park, Jr., Hanover, R.R. 1	Banner..........	17	25	8	17	22	89	
Wm. Weir, Durham, R.R. 1.....	O. A. C. 72......	15	24	7	16	20	82	
R. T. Edwards, Markdale, R.R. 1	Imp. Mammoth...	15	24	6	17	19	81	
Alex. Grierson, Hanover, R.R. 1	Banner..........	17	19½	8	15	21	80½	1
W. A. Livingston, do R.R. 1	O. A. C. 72......	10	22	8	18	21	79	1
M. Barber, Durham, R.R. 3.....	do	14	24	7	15	18½	78½	
A. Edge, do R.R. 1....	Wide Awake.....	16	22	7	13	20	78	
H. Brigham, Allan Park	O. A. C. 72......	12	25	4	19	17	77	
T. H. Binnie, Priceville, R.R. 1.	do	13	21	7	15	18	74	
W. W. Ramage, Varney, R.R. 1.	do	13	19	7	15	17	71	10
WALTER'S FALLS AGR. SOCIETY.								
Judge—Jas. McNeil, Maple.								
Jas. Caswell, Bognor, R.R. 2....	Banner..........	15½	22	8	19	19½	84	
Geo. J. Reid, Walter's Falls....	do	15	18	7½	19	20½	80	14
Jno. Thom, do R.R. 1	do	14½	20	7	19	18	78½	15
A. Mower, do	do	13½	23	7	18	15½	77	15
C. W. Saunders, do	do	16	14	7	18	21	76	15, 10
Sam'l. Saunders, do	do	13½	18	6	17	19	73½	15
J. J. Seabrook, Markdale, R.R. 3	do	12½	20	6	19	15	72½	15
Robt. Williamson, Goring	20th Century.....	15	15	7½	15	19	71½	15, 1
Thos. G. Quinton, Walter's Falls	Banner..........	15	12	7	18	19	71	15, 1
W. I. Seabrook, do	....	14	12	8	19	17	70	1
HALDIMAND.								
HALDIMAND AGR. SOCIETY.								
Judge—Adam Hood, Hagerman.								
S. A. Best, Cayuga, R.R. 4......	Banner..........	17	22½	8	19	21½	88	15, 10
Geo. Parsons, do R.R. 2......	O. A. C. 72......	16½	22	8	19	21	86½	15
H. Gardner, do R.R. 2......	Am. Banner......	15½	20	7	19	20½	82	14
T. H. Peacock, Jarvis, R.R. 3...	Bumper King....	14½	21	7½	18	20	81	
N. Last, Cayuga, R.R. 3....	Banner..........	14	21	8	18	19½	80½	10, 15
J. A. McConnell, do R.R. 2....	Granary Filler...	14½	20	7	18½	20	80	10, 14
J. Nablo & Son, do R.R. 3....	O. A. C. 72......	14½	20	8	16	19	77½	
A. Mehlenbacher, do R.R. 3....	do	14½	18½	7	19	18	77	10
Wm. Roth, Fisherville, R.R. 2..	Early Yielder....	14	20	7	16	18½	75½	14
Alex. Walker, Cayuga, R.R. 2..	Granary Filler...	14	18	6	19	18	75	10, 14

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OATS.

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HALTON.		(20)	(25)	(10)	(20)	(25)	(100)	
HALTON AGR. SOCIETY.								
Judge—R. H. Crosby, Markham.								
E. Harrop, Milton	O. A. C. 72	18½	20	9	19	22½	89	15
J. H. Wilson, do	Banner	18	20	9	18½	23	88½	2,15
H. Richardson, Milton	O. A. C. 72	18	21	9	16	23½	87½	15
Geo. A. Wilson, Georgetown	Banner	18½	17	9	18½	23½	86½	1,15
H. R. Frankland, Hornby	O. A. C. 72	17½	19	8	19	22½	86	2,15,14
E. Readhead, Milton	do	18½	17	9	17	23	84½	15
J. F. Ford, do	do	18	17	9½	18	21	83½	1.2,15
Wm. N. Scott, do	do	17½	17	8	17	21	80½	2,15,14,10
Ed. McCann, do	do	16	10	9	18	20½	73½	2.15.14
NELSON AND BURLINGTON AGR. SOCIETY.								
Judge—Jas. McLean, Richmond Hill.								
W. E. Breckon, Freeman	O. A. C. 72	14½	22	7	18	19½	81	14
Jno. Easton, do	do	15½	19	7½	17	21½	80½	10
L. Kerns, do	do	14	19	7½	19	19	78½	14,15
H. M. Pettit, do	do	17½	18	6½	19	17	78	14,15
Jno. Hetherington, Campbellville, R.R. 3	Great Dane	14½	18½	7	16	20½	76½	15,14
W. M. Lucas, Freeman	Sensation	13½	17	8	17½	19½	75½	10
G. Breckon, Bronte, R.R. 1	O. A. C. 72	15	14	7	19	20	75	9,15,14
J. A. Pettit, Freeman	Banner	15½	16	7	17	17	72½	15.10
HASTINGS.								
MADOC AGR. SOCIETY.								
Judge—Wm. Higginson, Inkerman.								
Jas. Caskey, Madoc	O. A. C. 72	15	20	6	17	20	78	15,10
I. Broadworth, do	Imp. Banner	15	18	7½	17	20	77½	15.6
H. Rollins, Cooper	O. A. C. 72	15	18	8	17	19	77	13
Wm. Rollins, do	Am. Banner	16	16	7½	17	20	76½	4
Henry Kells, Madoc	O. A. C. 72	14	20	7	15	20	76	
C. Jno. Smith, do	Swedish Victory	13	19	6	18	18½	74½	4
J. S. Empey, Eldorado	Banner	13½	15	7	17	20	72½	
WOLLASTON AGR. SOCIETY.								
Judge—Wm. Higginson, Inkerman.								
Herb. Moore, The Ridge	O. A. C. 72	16½	22	8½	17	21½	85½	15
C. McGregor, do	do	14½	23	8	17	21	83½	
D. Henderson, do	O. A. C.	13	23½	6	15	18½	76	
Chas. Moffatt, Coe Hill	O. A. C. 72	12	18	6	18	19	73	
D. Maitland, The Ridge	do	14½	15	6½	15½	20	71½	4,13
Irvine Moore, Lake	do	13½	20	6	16	14½	70	10

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OATS.

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HURON.		(20)	(25)	(10)	(20)	(25)	(100)	
EAST HURON AGR. SOCIETY.								
Judge—D. L. McClure, Brampton.								
R. J. Hoover, Brussels	O. A. C. 72......	19½	20½	9	19½	23½	92	15
R. L. Taylor, do R.R. 2.....	do	15	24	9	19	23	90	
Lorne Nichol, do R.R. 4.....	do	17	20	9	18½	22½	87	15
W. R. Moses, Bluevale, R.R. 2..	Golden Gem......	17	22½	9	17	22½	86⅔	
Jno. Crerar, Brussels, R.R. 3	O. A. C. 72......	17	19	9	18	22	85	10,15
Turnbull & Son, do	do	17	20	8	18	21	84	
J. M. Lowe, do R.R. 3	do	16	18	9	18	22	83	15,1
H. J. Hoover, do R.R. 2	do	16½	13	8½	20	22	80	1,15
Wm. Sleeman, do R.R. 3	Banner..........	16½	15	8	18	22	79½	1
Jno. J. McGavin, Walton, R.R. 2	do	17	10	9	19	24	79	1
L. E. Carduff, Brussels......	Gold Drop.......	16	15	9	18	22	78⅔	1,15
Jos. Armstrong, do R.R. 3	O. A. C. 72......	14	18	8	16	19	75	15,1
A. Lamont, do R.R. 3	——	16	14	9	13	22	72⅔	15
H. Whitfield, do	Gold Drop.......	20	20	5	15	13	71⅔	1
HOWICK AGR. SOCIETY.								
Judge—E. I. McLoughry, Markdale.								
Wm. Brown, Sr., Gorrie, R.R. 2	O. A. C. 72......	18	21	8	17	21½	85½	15
Jno. Wiley, do	do	18	20	8	16	21½	83½	1,2
H Sparling, do R.R. 2	do	18	15	8	19	22½	82½	1,15
A. McLaughlin, do R.R. 1	do	15½	20	8½	18	20	82	15
A. W. Keil, do R.R. 2	do	17	18	8½	18	19½	81	1,2
Hugh Edgar, do	do	16	20	7	17	20	80	15
Robt. F. Edgar, do	M. Cluster.......	17	17	9½	17	21	79½	22
H.E.McKercher, Wroxeter, R.R.2	O. A. C. 72......	13	20	6	19	19½	77½	15
Chas. Dickett, Gorrie, R.R. 1....	Sterling.........	17½	15	8	17	20½	76⅔	1,15
G. Edgar, do R.R. 2....	O. A. C. 72......	15½	12	9	17	19½	73	1
R. J. Sanderson, Fordwich.....	do	17	14	6	14	20½	71½	2,1
R. Wilkin, Palmerston, R.R....	do	16	10	7	16	21	70	1,2
TURNBERRY AGR. SOCIETY.								
Judge—M. W. Sexsmith, Ridgeway.								
Jno. L. MacEwan, Wroxeter, Box 27	O. A. C. 72......	19½	24	9½	19	23	95	
R. Wilton, Wingham, R.R. 1..	do	18	20	9½	20	24	91½	
G. N. Underwood, do R.R. 1..	do	18	22	9	19½	22½	90	15
Wm. Webster, Lucknow, R.R. 2.	do	18	23	8	16	23	88	15
H. T. Perdue, Wingham, R.R. 5..	do	19	18	6	20	23	86	14
P. Leaver, do R.R. 3..	do	16	23	6	19	20½	84½	15
F. Stamper, Bluevale, R.R. 1....	Banner..........	17	23	8	16	20	84	15
M. Proctor, Wingham, R.R. 4	O. A. C. 72......	15	16	8	19½	22	80½	14,15
Geo. Cruickshank, do R.R. 1	Bumper King....	18	10	9	20	24	79⅔	1
W. J. Curry, do	O. A. C. 72......	18	12	9	16	23½	78½	
F. Henry, Lucknow, R.R. 5.....	do	13	20	8	18	19	78	15

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OATS.

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HURON.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
ZURICH AGR. SOCIETY.								
Judge—R. W. Zavitz, Guelph.								
E. Broderick, Hensall	O. A. C. 72	19	22	9	19½	22½	92	10
E. Kruger, Dashwood	do	16½	25	9½	19½	21	91½	
O. Klopp, do	do	16½	24	9	19	20	88½	
L. H. Rader, do	do	18½	23½	6	19	20½	87½	
Sam'l. Scoch, Zurich, R.R. 2	do	17	24½	8½	17½	19½	87	
Wm. C. Pearce, Hensall	do	17½	17	9½	19	22	85	10, 12
J. A. Manson, Dashwood, R.R. 1	do	18½	19	9½	15	20	82	1
E. F. Klopp, do	do	13½	17	8½	19	17½	75½	1
A. Rannie, Zurich, R.R. 3	do	10	23½	8	18	14½	74	
KENORA AGR. SOCIETY.								
Judge—J. McKay, Emo.								
T. H. Lewis, Oxdrift	Gold Rain	18½	25	9	19½	22½	94½	
J. C. Smith, Dryden	O. A. C. 3	17½	25	8½	19	20½	90½	
D. McKenzie, Eagle River	Gold Rain	18½	24	7	18½	21½	89½	
W. H. Martin, Dryden	Great Ligowa	18	23	8	17	23	89	
Wm. H. Devoe, do	Gold Rain	17½	23	8	17	22½	88	
A. J. Gardiner, Eagle River	do	18	22	7	18	22½	87½	
Jno. Adams, Oxdrift	Victory	17½	21	9	17	22¼	86¾	1
E. W. Wise, Dryden	Gold Rain	16	25	8	17	19½	85½	
Wm. Tew, do	Orloff	15½	24	9	18½	18½	85½	
Mrs. M. James, Oxdrift	Gold Rain	16¼	21	8	17	21	83¼	
A. E. Browning, do	Victory	17	23	8	14	20¼	82½	
Con. Snider, Oxdrift	Victory	17	23	7	15	20½	82½	
Wm. Miller, Dryden	Orloff	15½	19	9	17	21	81½	13
Wm. D. Neely, Oxdrift	Gold Rain	15½	14	8	18	20½	76	1
C. Weaver, Dryden	do	10	24	9	16	16½	75½	1
A. Spencer, Eagle River	O. A. C. 3	13½	16	8	16	20	73½	
J. S. Corner, Oxdrift	O. A. C. 72	18½	7	9	17	21	72½	1.7
Jno. Hutchison, Dryden	Ligowa	13¾	13	8	17	20	71¾	7
Jas. Hutchison, do	do	16½	10	8	17	20	71½	7
KENORA AGR. SOCIETY.								
Judge—J. McKay, Emo.								
S. Sundine, Keewatin		17½	21	9	19	21	87½	1
Wm McDonald, Kenora	Banner	16	23	7	17	21	84	1
Jno. Gould, do	Victory	15½	21	9	17	20½	83	1.7
Wm. McKreith, do		15½	16	9	17	21	78½	15.1
H. Thorpe, do		15	16	8	17	19½	75½	1
G. H. Alock, do		14	12½	9	17	22	74½	1
F. Day, do	Banner	15	12	9	17	21	74	1
Jas. Smith, Pellatt		16½	12	8	16	20½	73	
Jas. Perault, Kenora		15½	15	7	17	18	72½	1
Jno. Sim, do		16½	13	5	17½	20	72	9, 1

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
KENT.		(20)	(25)	(10)	(20)	(25)	(100)	
EAST KENT AGR. SOCIETY.								
Judge—R. H. Abraham, Chatham, R.R. 1.								
Jno. McDowell, Thamesville....	Imp. Banner.....	19	24	9¾	17	23	92¾	
Sam'l. Holmes, Northwood, R.R.3	Banner..........	19	24	9½	17	23	92½	
Percy Secord, Thamesville	O. A. C. 72......	19	23	9	18¼	23	92¼	
Dan. Winters, Northwood, R.R. 3	Pearl's Cove	18	22	9	18	22½	89½	
Jas. Sherman, Thamesville....	M. Cluster.......	18	23	8	17	23	89	
H. F. Hetherington, do	Scottie..........	17	22	9	16	24	88	
Geo. Barker do	Abundance.......	15	23	9	17	22	86	
Geo. Cudmore, do	Dodd's Early.....	15	24	9	17	20	85	
L. D. Hubbell, do	M. Cluster.......	18	17	9	18	22	84	10
E. Sherman, do	do	17	20	8	16	22½	83½	
Robt. Norton, do	O. A. C. 72......	17	20	9	16	18	80	
Wilfred Smith, do	....	18	22	9	5	23	77	
WALLACEBURG AGR. SOCIETY.								
Judge—C. C. Rokeby, Port Rowan.								
D. Coveny, Electric, R.R. 1.....	Reg. Banner	18	24½	8½	17	21½	89½	
F. McCreary, Wallaceburg	Banner	17	23	7½	18½	20½	86½	
G. W. L. Mickle, do R.R. 2	do	16½	22	8½	19	20	86	
O. Crowe, do	O. A. C. 72	17	22	8	16½	20½	84	15
Chester Crowe, do	Banner	16	20	9	19½	19	83½	4
D. L. McCreary, do	O. A. C. 72......	16½	22½	7½	17	19½	83	
J. M. Langstaff, Tupperville ...	Banner	16½	20	7½	18½	20	82½	15
W. C. Gordon, Electric, R.R. ...	Bonanza	16	20	8	19	19	80§	13
Jno. Coveny, do R.R. ...	Imp. Banner	15	20	8	17	18½	78½	15
H. Forbes, Tupperville	Banner	16½	20	5	19½	17½	78½	15
H. Handson, Electric	do	17	15	8	16½	20	76½	4, 15
LAMBTON.								
BROOKE AND ALVINSTON AGR. SOCIETY.								
Judge—Robt. Berry, St. Mary's, R.R. 1.								
Jas. Hand, Alvinston	Banner	18	24	9	18½	21	90½	15
Jas. McCallum, do	Abundance	18½	23	9½	17	22½	88½	§15
T. H. Lovell, do	do	16½	24	9	18	21½	87§	14, 15
D. Hayter, do	do	17½	22½	9½	14	22	83½	§15, 14
S. W. Oke, do	O. A. C. 72	15	20½	5	19	20½	80	15, 14
D. G. Maddock, do	Abundance	15½	22½	7	16	19	78§	15
Geo. Lightfoot, do	Silver Mine	15½	22	6	17½	18½	77½	§
W. J. Weed, do	Banner	16½	21	6	13½	19½	76½	15
Ed. Reader, do	Bonanza	10½	22½	7	19	16	73§	14
H. A. Gilroy, do	Banner	13	15	5½	17	20	70½	15, 14

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
LAMBTON.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
EAST LAMBTON AGR. SOCIETY.								
Judge—Lee Cascadden, Aylmer.								
Jas. A. Hair, Watford, R.R. 7...	O. A. C. 72	18½	23	9	18	22	90½	14, 15
Jno. Zavitz, Alvinston	Banner	17	23	8	18	21½	87½	
E. A. Kidd, Watford	do	16½	22	10	17	20	85½	
W. Annett, do R.R. 3	do	15	23	8	18	20½	84½	15
Geo. McCabe, Alvinston	Abundance	17	22	8	18	21	84§	15
E. H. Shirley, Watford	Silver Mine	15	19	9	18	22	81§	10, 15
W. W. Taylor, Alvinston, R.R. 7	do	15	20	8	16	18½	75½	§15
W. S. Shugg, do R.R. 7	Abundance	15	20	8	16	18	75§	15
FLORENCE AGR. SOCIETY.								
Judge—Jas. Pullin, Woodstock, R.R. 1.								
W. F. McFadden, Florence, R.R.3	O. A. C. 72	16	23	8	16	22	85	15
J.H.Buchanan,Thamesville,R.R.2	do	13	20	5	20	18	76	
PLYMPTON AND WYOMING AGR. SOCIETY.								
Judge—Lee Cascadden, Aylmer.								
Jas. Bryson, Wyoming	O. A. C. 72	17	23	10	18	20½	88½	15
Thos. Anderson, do	Banner	17½	22	8	19	21½	88	4, 15
J. F. Donald, do	do	17½	23	7	18	22	87½	14
Geo. A. Dewar, do	Jewel	18	24	8	18	21	87§	
A. P. McFarlane, Camlachie ...	O. A. C. 72	15	24	10	18	19½	86½	
R. R. Smith, Wyoming	Banner	16½	20	9	18	22	85½	1
H. Hunter, do	O. A. C. 72	16½	23	8	18	19½	85	
Chas. F. Smith, do	Banner	16½	22	9	15	20½	83	1
H. J. Bryson, do	Klondyke	15½	15	8	16	20	72½	§1, 15
SOMBRA AGR. SOCIETY.								
Judge—Robt. Berry, St. Mary's, R.R. 1.								
Jno. Johnston, Port Lambton...	Banner	17	22	8	15	21½	83½	
H. Shiller, do ...	O. A. C. 72	16½	20	7	18½	20	82	14
S. S. Deyo, Wallaceburg, R.R. 5	do	16	22½	6½	18	16	79	15, 14
Bert Payne, Port Lambton	do	14	20½	8	18½	17½	78½	15, 14
F. Burgua, Sombra	do	13½	22½	5	17	16½	74½	14
Jno. McRae, Port Lambton	do	15	12	7	19	19½	72½	15, 14
LEEDS.								
BROCKVILLE AGR. SOCIETY.								
Judge—G. W. Davidson, Kemptville, R.R. 4.								
J. S. Moore, Bellamy, R.R. 1...	O. A. C. 72	17	22	9	19	23	90	15
J. Gilroy, Tincap	Banner	17	22	8	18	22½	87½	5
H. Kendrick, Bellamy, R.R. 1...	McCarten's Bump	15	21	9	19½	22½	87	5, 14

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
LEEDS.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
BROCKVILLE AGR. SOCIETY.—*Con.*								
A. J. Bushfield, Mallorytown	O. A. C. 72	16½	22	8	17	22½	86	5, 4
D. Johnson, Rocksprings	Banner	17	20	6	17	22	82	15, 17, 10, 4
H. J. Vandusen, Bellamy's, R.R. 1	Bumper King	14½	22	7	19	19	81½	5, 10, 12
Jos. Hudson & Son, Lyn	do	16	17½	7	19	20	79½	5, 10
J. Findam, Tincap	Banner	16½	20	8	15½	19	79	5
Fred Kerr, Rocksprings	Imp. Banner	15½	21	5	18	19	78½	10, 2, 14, 12
LANSDOWNE AGR. SOCIETY.								
Judge—G. W. Davidson, Kemptville, R.R. 4.								
Wm. Landon, Lansdowne	Abundance	17½	22	8	19	22	88½	10, 4, 8
Jno. B. Wilson, do	Banner	15½	23	8	18	23	87½	10, 4, 15, 14
H. McD. Gray, do	O. A. C. 72	16	23	8	18	22	87	10
Thos. Stacy, do	do	16½	22	7½	19	21½	86½	10, 4
F. Doak, do	Golden Chester	15½	22	8½	18	22	86	4
B. Stringer, do	Banner	15½	21	8	18	22	84½	10, 14
O. W. Landon, do	O. A. C. 72	15	20	8	18	19	80	10, 4
Jos. Shields, do	Banner	15½	18	7	18	20	78½	2, 14
W. B. Stacy, do	do	13½	18	9	18	17	75½	10, 4, 14
Robt. Shields, do	do	13	20	6	18	16	73	10, 4
LOMBARDY AGR. SOCIETY.								
Judge—J. D. McLennan. Lancaster, R.R. 1.								
H. Chalmers, Smith's Falls	Banner	19	24	5	20	23	91	
E. P. Kelly, Lombardy	do	19	24	7	18	22	90	13, 11
Jno. Duffield, do	do	16	23	6	19	22	86	
E. J. O'Meara, do	O. A. C. 72	15	20	8	19	22	84	13
R. Covell, do	Banner	14	23	7	18	17	79	12
Jno. Hamer, do	O. A. C. 72	15	22	7	12	22	78	15
D. Joynt, do	White Wave	15	22	7	14	18	76	
LINCOLN.								
Judge—M. W. Sexsmith, Ridgeway.								
NIAGARA TOWN AND TP. AGR. SOCIETY.								
R.G.Dawson,Niagara-on-the-Lake R.R. 2	Reg. Banner	18½	24	9	20	21	92½	10
J. D. Cooper, do R.R. 1	Imp. Banner	17	23	9½	20	20½	90	14
Chas. Knox, do R.R. 2	Banner	16½	22	8	20	20	86½	
J. J. Craise, do	Am. Banner	16½	23	9	18	19	85½	
Jas. R. Murray, do R.R. 1	Banner	18½	17½	9	20	20	85	15, 1
W. Sheppard, do R.R. 1	do	15½	23	9	18	19	84½	14
J. W. Hope, do R.R. 1	O. A. C. 72	16½	21	9	17	19½	83	15, 14
Geo. E. Wedge, do R.R. 1	do	14½	20½	9	19	19½	82½	14, 15
Chas. Hutchison, do R.R. 1	Banner	15½	24	8	16	18	81½	
A. A. Muir, do R.R. 1	O. A. C. 72	18½	16	9½	17	20	81	15, 10
Wm. Farron, do R.R 2	Banner	15½	16	9	20	19	79½	10, 14, 15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

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MIDDLESEX.		(20)	(25)	(10)	(20)	(25)	(100)	
CARADOC AGR. SOCIETY.								
Judge—R. H. Crosby, Markham.								
D. Campbell, Mt. Brydges, R.R. 2	O. A. C. 72	18	23	9	19	22½	91½	15,14
Jno. Walker, do R.R. 2	do	18	22	9	19	23	91	15
A. M. McNeill, Strathroy	do	18	21	9	19½	23	90½	15,14
Alex. Lamont, Mt. Brydges	do	17½	20	9½	19½	21½	88	15,14
G. W. Watson, do R.R. 2	Banner	16	23	9	18½	20½	87	15,14
D. A. McNeill, Strathroy	O. A. C. 72	17½	20	9	19½	20½	86½	15
R. E. Miles, Mt. Brydges, R.R. 4	do	16½	23	9	17	19½	85	
Jno. Crawford, Strathroy	do	16½	17	9	18	20	80½	15,14
M. S. Leitch, do	Banner	15½	10	9	19	19½	73	15,11,14
DORCHESTER AGR. SOCIETY.								
Judge—Jas. H. McKee, Shelburne, R.R. 4.								
R. G. Boxall, Mossley, R.R. 2	O. A. C. 72	17½	24	8½	19	21½	90½	
Jos. Woods, Dorchester, R.R. 1	do	17	22½	9	19	20½	88	15
Arch. McNiven, Putnam	Daubeny	17	23	8	18	21	87	
L. Fenton, Mossley, R.R. 2	O. A. C. 72	16	23½	7½	19	20	86	
F. L. Atkins, do R.R. 2	Rennie's Special	15½	24	9	17½	19½	85½	
H. Mathews, Putnam	Granary Filler	16	21	9	18½	20	84½	15
J. Pettit, Dorchester, R.R. 3	Banner	13½	22	8	21	18	82½	
G. F. Neely, do R.R. 1	O. A. C. 72	14½	22	7½	18	18	80	15
Chas. Hunt, do R.R. 2	Banner	15½	22½	8	10½	20½	77	15
Mrs. G. W. Neely, Dorchester	O. A. C. 72	13½	21	4	16	18	72½	15
EAST MIDDLESEX AGR. SOCIETY.								
Judge—D. English, Burketon, R.R. 3.								
Jno. Armitt, Hyde Park	Banner	18½	22	9	20	23	92½	15
A. Cornish, Wilton Grove, R.R. 1	O. A. C. 72	19	23	8	20	22	92	
R. I. Baty, do R.R. 1	Am. Banner	16	23	8	18	23	88	15
A. Beattie, do	O. A. C. 72	16	22	8	18	22	86	15,14
Wm. Hueston, Thorndale	do	15½	23	7	18	22	85½	15
E. Vining, Belton	do	15	23	8	18	21	85	15
J. H. Wheaton, Thorndale	do	14	22	7	18	20	81	15
Geo. Riddle, Wilton Grove	Banner	13	17	7	18	19	74	15
LONDON TP. AGR. SOCIETY.								
Judge—T. G. Brown, Ancaster.								
N. Grieve & Sons, Ilderton, R.R. 2	Wyatt	17½	24	9	18½	21	88½	
L. G. McLary, London, R.R. 2		17½	23	9½	16	21½	87½	
Jas. Smibert, Ettrick	O. A. C.	16½	22½	9	16½	20	84½	
R. Dale, Ilderton, R.R. 2	Banner	15½	20½	9	17½	19	81½	

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OATS.

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MIDDLESEX.—*Con.*		(20)	(25)	(10)	(20)	(25)	(100)	
LONDON TP. AGR. SOCIETY.—*Con.*								
J. D. Campbell, Denfield, R.R. 1	Granary Filler	16½	18½	8½	17½	22	81½	1, 15
E. T. Caverhill, Ilderton	O. A. C. 72	15½	18	8	17	21½	80	1
G. Pincombe, Strathroy, R.R. 1.	do	15	18	9	17	20½	79½	1, 15
Jas. Corsant, Ettrick	Banner	17½	12½	9	18	21	78	1
W. A. Piper, Hyde Park	....	16½	10	9	15	20½	71	1, 15
C. W. Hobbs, Denfield	Banner	14	12½	8	17	19	70½	1, 15
MCGILLIVRAY AGR. SOCIETY.								
Judge—Jas. H. McKee, Shelburne, R.R. 4.								
Jno. Dixon, Ailsa Craig, R.R. 2	O. A. C. 72	16	24	8½	19½	20	88	
Wm. L. Corbett, do R.R. 2	do	16½	23½	8½	19½	19½	87½	
J. J. Graham, do R.R. 3	do	16½	22	7	19	19½	84	
Fred Neil, do R.R. 3	do	16	22	8	16½	19	81½	
J. H. Amos, do R.R. 3	Banner	13½	20	7½	15	18½	74½	15
W. J. Robinson, do R.R. 3	do	14	18	8	15	18½	73½	15
J. C. Reid, Parkhill, R.R. 8....	do	14	20	7½	15	16½	73	15
O. Amos, do R.R. 8	do	16	13	9	15	19½	72½	1
Gibson Bros., Ailsa Craig,, R.R. 3	do	16½	10	8½	17½	19	71½	1
Jas. Darling, Parkhill, R.R. 8..	do	14½	13	8	17	18	70½	1
MELBOURNE AGR. SOCIETY.								
Judge—R. H. Crosby, Markham.								
W. P. Corneil, Appin	O. A. C. 72	18½	23	9	18½	23	92	
H. A. Fletcher, Melbourne	Banner	18½	21	9	18½	23	90	15,14
M. McNeil, do	O. A. C. 72	18	22	9	19½	20½	89	
R. Eaton, Appin	do	18	23	9	17	21½	88½	
Fred. Eaton, do	do	18½	20	9	18	22½	88	15
G. Hyndman, Melbourne	do	17½	20	8½	18½	19½	84	15
Chas. B. McLean, do	do	18	17	9	19	20½	83½	15,14
C. McCallum, Appin	do	18	20	9	15	21	83	15
B. Galbraith, do	do	16½	20	9	16	19½	81	15
D. A. McLean, Melbourne	do	16	18	8½	18½	19½	80½	15,14
H. Mullins, do ...	do	16	15	9	17½	19½	77	15
NORTH MIDDLESEX AGR. SOCIETY.								
Judge R. W. Zavitz, Guelph.								
Geo. Hindmarsh, Ailsa Craig ..	Banner	18	23	9	15	18½	83½	
K. McArthur, do ..	do	16½	23	8½	18	17	83	
Hughes Bros., do ..	do	16½	24	8	13	19½	81	
A. E. Rosser, do ..	O. A. C. 72	15½	24	9	18	14	80½	
D. MacArthur, do ..	Banner	13½	18	8	18	17	74½	10
Jas. McFarlane, do ..	Abundance	18	9	8	18½	19½	73	1
Chas. Lynn, Clandeboye	Banner	17½	8	9	18	19½	72	1

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OATS.

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MIDDLESEX.—*Con.*		(20)	(25)	(10)	(20)	(25)	(100)	
STRATHROY AGR. SOCIETY.								
Judge—W. F. B. Switzer, Streetsville.								
D. Leitch, Mt. Brydges, R.R. 2	O. A. C. 72	17½	24	8	19½	22	91	
Jas. Dymond, Kerwood	Banner	18	22½	8	19	22½	90	
D. A. Lyman & Son, Strathroy, R.R. 2	do	17	23	8	19	22	89	14, 15
Jas. A. Sabine, Strathroy, R.R. 2	O. A. C. 72	17	24	8	19	20	88	
Wm. V. Ferguson, do R.R. 2	do	16	22	8½	18	21½	86	14, 15
M. Toohill, do R.R. 3	Banner	14½	22	7½	19	19½	82½	
Ed. De Gex, Kerwood	do	16	21	8	17	20	82	15
D. L. Crawford, Strathroy, R.R. 1	O. A. C. 72	13½	18	8	19	18½	77	14, 15. 1
UNITED INDIAN AGR. SOCIETY.								
Judge—Jas. A. Cameron, Weston.								
Jno. Sutherland, Muncey	O. A. C. 72	16	23	9	19	23	90	15
Sam'l. Muskokomon, do	do	16	22	9	19	23	89	12
Jos. Antone, Southwold	do	17	22	8½	18	23	88½	15
Jno. A. Riley, Christina	do	16	22	9	18	23	88	15
W. Henry, Muncey	do	16½	22	8	18	23	87½	15, 12
Thos. Summers, Muncey	do	16	20	8	19	22	85	15
A. Antone, Southwold	do	14½	20	8	18	22	82½	15
A. G. Henry, Christina	do	16	18	8	18	21½	81½	10, 15
Geo. French, do	do	14½	19	8	17	22	80½	15
Jos. Young, do	do	15	18	8	17	22	80	1
WESTMINSTER AGR. SOCIETY.								
Judge—D. English, Burketon.								
I. B. Whale, London, R.R. 1	O. A. C. 72	19	22	8	20	23	92	15
O. D. Griffith, Lambeth, R.R. 3	do	18	23	9	18	20	88	15
A.L.Rodgers,Wilton Grove, R.R. 2	do	16	21	8	18	22	85	15
W. C. Pack & Sons, Byron, R.R. 1	do	16	21	8	18	19	82	15
H. Willis, London, R.R. 1	O. A. C. 72	15½	20	8	17	21	81½	15
Robt. McEwen, London, R.R. 4	do	18	16	8	18	21	81	10, 15
Eli Smale, Wilton Grove	Banner	15½	20	8	16	21	80½	14, 15, 10
W. E. Wright & Son, Glanworth	do	14	21	8	18	19	80	15
H. Wickerson, Byron	Swedish Giant	15½	22	8	15	20	78½	§15
Wm. Tanton, London, R.R. 4	Banner	14½	20	7	16	20	77½	15
W. H. Beattie, Wilton Grove	do	13½	20	7	17	19	76½	15, 10
Wm. H. Shore, Glanworth	O. A. C. 72	13	20	8	16	19	76	
Thos. College, London, R.R. 4	Glen	12	20	7	17	19	73§	15
MUSKOKA.								
GRAVENHURST AND MUSKOKA AGR. SOCIETY.								
Judge—W. H. Davis, Ivy, R.R. 7.								
G.W.Miller, Gravenhurst, Box 179	O. A. C. 72	15	22	9	18	22	86	
Josh. Short, Gravenhurst	New Sterling	14½	22	6	17	21	80½	
W. Ruttan, Gravenhurst	Rennie'sE.Yielder	13½	21	8	17	18	77½	15

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
MUSKOKA.—*Con.*		(20)	(25)	(10)	(20)	(25)	(100)	
GRAVENHURST AND MUSKOKA AGR. SOCIETY.—*Con.*								
J. Groh, Gravenhurst	O. A. C. 72	13½	20	6	16	20	75½	
S. Polmateer, do	do	14	16	8	17	20	75	10, 15
O. E. Taylor, Reay	Banner	11	22	7	17	16	73	
Robt. McKay, Gravenhurst	O. A. C. 72	13	19	8	16	15	71½	14
W. W. Morrison, Reay	Reg. Banner	14	16	8	14	18½	70½	14, 15
J. T. Galbraith, do	Egyptian	12½	16	7	17	18	70½	14
MEDORA AND WOOD AGR. SOCIETY.								
Judge—Jas. Boyd, Markham.								
F. W. Knight, Brackenrig	O. A. C. 72	16½	24½	7	18	22	88	
Arch. Mitchell, Bardsville	do	17	23½	6	19	22	87½	4
R. D. Riley, Milford Bay	do	15	23	8	20	21	87	15
T. W. Knight, Brackenrig	do	15	24	6½	19	22	86½	
Thos. Aikens, Port Carling	Scottish Chief	15½	23½	8	19	22	86⅔	
Jno. Davidson, Brackenrig	O. A. C. 72	14	23½	8	18	21	84½	15
Daniel Brown, Port Carling	Banner	14	23	8½	17	21	83½	15, 14
G. Fraser, Brackenrig	Imp. Scotch	12	23	8	20	22	83⅔	15
Wm. Chambers, Bardsville	do	15	22	7	18	22	82⅔	15
W. A. Pooler, Point Kaye	O. A. C. 72	14	22	6	19	20	81	
Chas. Donald, Port Carling	do	14	22½	7	17	20	80½	15
G. W. Boyce, Brackenrig	Imp. Scotch	13	22	8	18	21	80⅔	15, 14
C. L. Edwards, do	O. A. C. 72	13	20	7½	18	20	78½	15
W. K. Foreman, Port Carling	Garton's Abundance	11	20	8	19	20	76⅔	15, 10
Jno. Smith, Brackenrig	Garton's Abundance	11½	19	8	18	21	75½	⅔15, 14
NORTH MUSKOKA AGR. SOCIETY.								
Judge—D. Smith, Smithdale.								
Jno. Pleace, Huntsville	O. A. C.	15	20	7	18	18	78	
H. T. Hill, Hillside	O. A. C. 72	14½	16	7	16	18	71½	10
Gordon Hill, do	Banner	14	20	6	16	15	71	
R. J. S. Hill, do	do	14	20	6	15	15	70	15
SOUTH MUSKOKA AGR. SOCIETY.								
Judge—W. H. Davis, Ivy, R.R. 7.								
H. L. Goltz, Bardsville	O. A. C. 72	17	21	8	18	23	87	15
Alex. Barron, Bracebridge	Banner	14	20	9	18	21	82	15
Chas. H. Kaye, do		14	20	8	17	21	80	15
P. C. Kaye, do	O. A. C. 72	10½	18	9	18	16	71½	15
H. B. Buckerfield, do	Storm King	11½	20	8	17	14	70½	14
Wm. Naismith, Falkenburg	Reg. Banner	13	18	7	16	16	70	15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
MUSKOKA.—*Con.*		(20)	(25)	(10)	(20)	(25)	(100)	
STEPHENSON AND WATT AGR. SOCIETY.								
Judge—D. Smith, Smithdale.								
N. Hammell, Raymond	Banner	16½	22	7	18	20	83½	
H. Creasor, Ullswater	O. A. C. 72	15½	22	7	18	18½	81	
Geo. Hammell, Raymond	Banner	16½	22	6	17	19	80½	
Thos. Hammell, do	do	15	22	8	17	18	80	
H. Rawson, do	do	15	20	8	17	19	79	
Leslie Bunn, Ullswater	O. A. C. 72	15½	21	7	17	18	78½	
H. Putnam, do	do	15	20	7	18	18	78	
Wm. J. Hammell, Raymond	Banner	14½	20	8	18	17	77½	
Thos. Graham, do	do	15	22	6	17	17	77	
Jno. McNicol, Allensville	O. A. C. 72	16	20	6	17	18	77	17
W. F. Somerset, Port Sydney	O. A. C.	14	20	6	17	19	76	
H. Patterson, Utterson		13½	20	6	18	18	75½	
A. E. Watson, Port Sydney	O. A. C. 72	14½	22	5	18	15	74½	
Jas. H. McNicol, Allensville	Banner	13½	20	7	17	17	74½	
W. A. Suffern, Raymond		14½	20	7	16	16	73½	1
A. J. Hughes, Port Sydney		14½	20	6	15	15	70½	
NIPISSING.								
BONFIELD AGR. SOCIETY.								
Judge—H. L. Goltz, Bardsville.								
L. Allard, Bonfield	Egyptian	13½	22	9	18	20	82½	15
P. Boissoneault, Bonfield	Banner	15½	20	7	16	19½	78	14
J. A. Boivin, do	O. A. C. 72	15½	17	8	16	19	75½	
E. Beaulieu, do	Egyptian	14	20	7	16	18	75	10
A. Boissoneault, Great Desert	Banner	13	22	9	12½	18	74½	
H. Boissoneault, do	do	13	17	8	18	18	74	10, 1
O. Foisy, Bonfield	M. Cluster	12	19	8	15	19	73	
H. Foisy, do		14½	15	8	12	20½	70	1, 4
NORFOLK.								
COURTLAND AGR. SOCIETY.								
Judge—A. J. Thompson, Toronto.								
A. Cowan, Courtland, R.R. 2	O. A. C. 72	16	22	8	18	22½	86½	15
G. B. Ryan, Tillsonburg, R.R. 4	do	14½	20	8	17	20	79½	
W. E. Sandham, do R.R. 4	do	12½	20	7	17	17	73½	14
Jno. McQueen, Courtland	do	12	18½	6	17	18	71½	15, 14
NORFOLK AGR. SOCIETY.								
Judge—A. J. Thomson, Toronto.								
J. D. Freeman, Lynnville	Banner	16	22	9	18	21	86	15
Percy Potts, Simcoe, R.R. 3	O. A. C. 72	16	21½	8	18	20½	84	15
H. Downing, Nixon, R.R. 1	Banner	14½	18	7	16	20½	76	15
Wm. Mason, Simcoe, R.R. 4	O. A. C. 72	13½	18	8	16	19	74½	4, 10
Geo. Erwin, do R.R. 4	Banner	13	16	7	17	18	71	
A. H. Smith, do R.R. 2	O. A. C. 72	11½	17	8	16	18	70½	15
Thos. Leedham, St. Williams	do	10½	18	7	16½	18	70	15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
NORTHUMBERLAND.		(20)	(25)	(10)	(20)	(25)	(100)	
SEYMOUR AGR. SOCIETY.								
Judge—W. H. C. Roblin, Ameliasburg.								
C. E. Bonnycastle, Campbellford, R.R. 1	O. A. C.	18	23	8	18	22	89	
H. McKelvie, Campbellford	Reg. Banner	16	23	9	18	22	88	15
A. Hume, do R.R. 3	O. A. C.	16	22	8	18	20	84	15
J. L. Forestell, do R.R. 1	do	16½	20	8	18	20½	83	15.10
C. A. Loucks, do	Granary Filler	16	20	8	18	20	80	§15, 10
Wm. Locke, do R.R. 3	O. A. C.	15½	18	7½	18	20½	79½	2, 15, 14
M. West, do	Siberian	15	20	8	18	20	79§	15
Thos. Dunham, do	O. A. C.	16	16	8	18	20	78	2, 10. 15
W. W. Whitton, do R.R. 5	M. Cluster	15½	18	7	18	20½	77§	10, 15
Wm. M. Stephens, do R.R. 3	Banner	14	18	8	15	19	74	2, 10, 15
Chas. Bedford, do	Sheffield Standard	15	17	8	16	19	73§	15.10
M. McKelvie, do	O. A. C.	15	18	8	12	18	71	15, 10. 2
J. S. Wallace, do R.R. 5	Rennie's E. Yielder	15	18	7	16	16	70§	15.10
Geo. Nelson, do	Banner	13	20	7	12	18	70	15.10
WOOLER AGR. SOCIETY.								
Judge—W. J. Barber, Rossmore.								
Wm. Ruttan, Wooler	Banner	17	23	7½	18	19½	85	15
H. McColl, do	Abundance	16½	22	7½	15	17	78	15
R. E. McMaster, Hilton	O. A. C. 72	15½	13	8	17½	17½	71½	15.4
H. B. Curry, Codrington, R.R. 1	Abundance	13½	18	7	15	17½	71	15
OXFORD.								
EAST NISSOURI AGR. SOCIETY.								
Judge—Jas. Pullin, Woodstock, R.R. 1.								
W. I. Hogg, Thamesford, R.R. 2	O. A. C. 72	16	22	8	18	20	84	
Jno. Bradshaw, do	do	15	22	6	18	18	79	
Mercer Bros., do	do	13	23	4	19	18	77	15
D. Thompson, do	Banner	14	20	8	10	19	71	15
PARRY SOUND.								
CHRISTIE AGR. SOCIETY.								
Judge—Wilson Black, Stroud.								
Jas. White, Orrville	O. A. C. 72	16	22	8	19	21	86	15
D. Sword, Maple Lake Station	Banner	16	22	8	18	20	84	15
W. H. Burns, Orrville	O. A. C. 72	15½	22	8	19	18½	83	15
Jno. Lawson, Maple Lake Stn.	Banner	15½	20	8½	18	20	82	14
M. H. Harker, Orrville	O. A. C. 72	16	20	8	18	19	81	15.10

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OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
PARRY SOUND.—*Con.*		(20)	(25)	(10)	(20)	(25)	(100)	
CHRISTIE AGR. SOCIETY.—*Con.*								
Ed. White, Orrville	Abundance	15	19	7	18	19	78	
Jas. Morrison, Maple Lake	Banner	14½	20	6½	18	18	77	15
F. E. Forbes, Orrville	Abundance	14½	18	7	18	18½	76	15
Leslie Forbes, do		14½	18	7	17	18	74½	15
Geo. Culp, do	O. A. C. 72	13½	18	7	18	17½	74	15, 14
J. Hannon, do		14½	18	6½	17	17½	73½	15
Wm. Hurd, do	Abundance	14	18	6½	18	16	72½	10
C. A. Klose, Maple Lake Station	White Wave	13	18	7	18	16	72	15, 10
LORING AGR. SOCIETY.								
Judge—J. A. McDermid, Collingwood, R.R. 2.								
Jno. H. Bain, Loring	White Wave	14	20	6	16	15	71	15
Wm. H. Robertson, Spring Creek	O. A. C. 72	13½	20	6	17	14	70½	15
MACHAR AGR. SOCIETY.								
Judge—F. A. Clark, Gormley, R.R. 2.								
T. R. Bottomley, South River	O. A. C. 72	13	18	7	18	16	72	15, 10
MAGNETAWAN AGR. SOCIETY.								
Judge—W. F. B. Switzer, Streetsville.								
Robt. Elliott, Magnetawan	M. Cluster	16	22	8	17	20	83	15
Jas. Stewart, do	do	16	20	8	18½	19½	82	15
W. Keppy, Spence	O. A. C. 72	15½	20	8	19	19	81½	
C. Miller, Magnetawan	O. A. C.	15½	20	8	18	19	80½	
Bert Simpson, Midlothian	M. Cluster	15½	20	7½	17½	19	79½	15, 14
H. Doherty, do	do	15½	20	8	16	19	78½	15
J. J. Irwin, Magnetawan	do	16	18½	7½	16	19½	77½	15
F. T. Hanbridge, do	Prize Cluster	15½	19	8	16	18½	77	15
H. S. Miller, Port Carman	O. A. C. 72	16	15	8	18	19½	76½	1, 15
H. Taylor, Magnetawan	E. Industrial	14	19	8	16	19	76	15
J. Wurm, Port Carman	Banner	13½	19	6	16	17½	72	15
A. H. McLachlan, Magnetawan		15	15	7	15	19	71	1, 15
McKELLAR AGR. SOCIETY.								
Judge—Wilson Black, Stroud.								
C. J. McKeown, McKellar	O. A. C. 72	17½	22	9	18	22½	89	15
Jas. E. Taylor, do	do	16	21	8	18	20	83	
Jos. H. Ball, do	Yel. Russian	16	20	8	18	20	80§	15
Thos. Moffatt, do	O. A. C. 72	15	20	8	18	18	79	
Jno. Junch, Sr., do	M. Cluster	15	21	8	18	18	78§	

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OATS.

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PARRY SOUND.—*Con.*		(20)	(25)	(10)	(20)	(25)	(100)	
McKELLAR AGR. SOCIETY.—*Con.*								
Wm. Watkins, McKellar	M. Cluster	14½	22	8	18	16½	77§	15
Ed. Moffatt, do	Sterling	14½	20	8	18	17½	76§	15
Robt. A. Moore, do	M. Cluster	14	20	8	18	17½	75½	§15
W. F. Tait, do	do	16	20	8	15	18	75§	11, 15
W. E. Taylor, do	O. A. C. 72	12½	21	7	18	16	74½	10
E. Buckner, Hurdsville	do	14½	17	7	18	17½	74	4
W. Quinn, McKellar	Yel. Russian	14½	17	8	18	17½	73§	15
W. H. Moore, do	O. A. C. 72	12	19	8	18	15	72	15
McMURRICH AGR. SOCIETY. *Judge—T. W. McCracken, Meadowvale.*								
F. Walker, Royston	Banner	17	25	8	20	20½	90½	
D. M. Cowie, Sprucedale	do	17	22	5	16	20	80	
H. Watson, do	O. A. C. 72	16	21	7	17	18	79	
M. Johnston, do	Abundance	13	20	6	17	19	75	
J. C. Marshall & Son, Sprucedale	do	14	16	7	16	20	73	
PERRY AGR. SOCIETY. *Judge—T. W. McCracken, Meadowvale.*								
T. E. Rowley, Emsdale	Bumper King	16	20	8	18	19½	81½	
J. Hanham, do	do	16	19	8	18	19½	80½	
A. Jenkins, do	Banner	16	17	8	18	20	79	
H. Libby, Fern Glen	O. A. C. 72	15	20	7	18	18	78	
Chas. Holland, Kearney	do	13	20	8	17	19	77	
Wm. George, Emsdale, Box 30	Giant Cluster	16½	10	8	18	20	72½	9
C. T. Hayward, Emsdale	O. A. C. 72	12	18	7	16	18	71	
Chas. Rose, do	Granary Filler	14	17	8	16	15	70	
POWASSAN AGR. SOCIETY. *Judge—J. A. McDermid, Collingwood, R.R. 2.*								
Jno. Paul, Powassan	Reg. O. A. C. 72	14½	22	9	20	15	80½	
Jos. Alston, do R.R. 2	O. A. C. 72	14½	20	8	18	14½	75	15
J. H. Jardine, Powassan	M. Cluster	14½	20	8	17	14	73½	15
E. J. Purdon, do	O. A. C. 72	15	18	8	15	15½	71½	
D. McIntyre, do R.R. 1.	do	13½	20	7	17	13½	71	15
A. Purdon, do R.R. 2.	Banner	13	20	7	16	14	70	15, 14
ROSSEAU AGR. SOCIETY. *Judge—Jas. Boyd, Markham.*								
Geo. Grenke, Hekkla	O. A. C. 72	15	21	9	20	22	87	15
Sam'l. Stoneman, Turtle Lake	Golden Rain	16	23	8	18½	22½	86§	15
Jno. McCans, Rosseau	O. A. C. 72	13½	23	9	20	20	85½	15, 14

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OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
PARRY SOUND.—*Con.*		(20)	(25)	(10)	(20)	(25)	(100)	
ROSSEAU AGR. SOCIETY.—*Con.*								
Robt. Wilson, Rosseau	Imp. Scotch	15½	22	9	18½	22	85§	15
Sam'l. Kettle, Jr., Maple Lake Station	O. A. C. 72	14½	21	8	20	21	84½	15
Wm. Fry. Rosseau Falls	do	13	24	7	20	20	84	15
F. A. Clubbe, Rosseau	Golden Rain	13	23	9	18	22½	83½	§
Wm. McCauley, do	O. A. C. 72	14	21	8	18	22	83	15, 9, 1
Jno. Crawford, do	Sensation	13	23	7	19	21	81§	15
Alex. Crawford, Sr., Rosseau	Garton's Abundance	16	17	8	19	22	80§	15, 10
W. C. Stoneman, Turtle Lake	Golden Rain	14	20	7	19	21½	79½	§15, 14
STRONG AGR. SOCIETY.								
Judge—F. A. Clark, Gormley, R.R. 2.								
Cottrell Bros., Sundridge	O. A. C. 72	15	22½	8	19	19½	84	15
Geo. Frost, do	do	12	21	7½	20	18½	79	1
Thos. Hodgson, Pearceley	do	14	21	8	18	17	78	15
F. W. Hanford, Sundridge	do	14	21	6	18	18	77	10, 15
Jno. Batterick, do	Irish	12	23	7	18	18	76§	
Jno. Cunningham, do	Derby	15½	17	8	16	19½	74§	2, 15
Jas. Prior, do	Banner	10½	22	6	18	16	72½	
Jas. Wilson, do	M. Cluster	14½	21	7	14	17	71½	§10
J. Paget, do	O. A. C. 72	14	12	8	19	17½	70½	1, 15
UNITED TPS. AGR. SOCIETY.								
Judge—W. F. B. Switzer, Streetsville.								
Wm. Hamilton, Dunchurch	O. A. C. 72	14½	23	8	18½	19	83	
Sam'l. Irwin, McKellar	M. Cluster	16	21	8	18	19½	82½	15
R. J. Moore, Jr., Dunchurch	O. A. C. 72	16	22	8	18	18	82	15
W. Brear, Maple Island	do	16	15	9	19	20	79	1
Jno. A. LaBrash, do	do	13½	22	7	18	18	78½	15
Wm. J. Dobson, Dunchurch	Banner	13	21	8	18	18	78	
Jos. Whitmell, do	New Sterling	14	18	8	18	19	77	15
Jas. LaBrash, Maple Island		13	20	7	18	17½	75½	15
Robt. J. Farley, Dunchurch	O. A. C.	12½	20	8	18	16	74½	
A. Robertson, do	O. A. C. 72	13	20	7	16	17½	73½	
PERTH.								
ELMA AGR. SOCIETY.								
Judge—Andrew Schmidt, Mildmay.								
Alex. Robb, Atwood, R.R. 2	O. A. C. 72	18½	24	6	17	23½	89	
Jno. S. Cowan, do R.R. 2	Diamond King	18½	19	9	18	22½	85§	1, 15
Wm. S. Shearer, Listowel, R.R. 2	O. A. C. 72	18	15	7	18	21½	79½	15, 14, 2
Wm. Donaldson, Atwood, R.R. 4	Granary Filler	18	10	8½	18	19½	72§	15, 1

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
PERTH.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
FULLARTON, LOGAN AND HIBBERT AGR. SOCIETY.								
Judge—Jas. Boyd, Markham.								
Robt. Norris, Staffa, R.R. 1	Reg. Banner	17	21½	9	20	23	90½	1,15
A. Hodgson, Dublin, R.R. 2	Yel. Russian	17½	23	9	19	23½	90§	
Geo. Leonhardt, Bornholm	O. A. C. 72	16	22	9	19	23½	89½	2
H. R. Greenwood, Mitchell, R.R. 1	do	16	23	8	19	23	89	15
Geo. Hillebrecht, Bornholm	Banner	14	24	7	20	20	85	15
Alex. Cole, Russelvale	Yel. Russian	15½	21	9	19	22	84½	§1
Amos Doupe, Kirkton	Banner	16	17	9	18	23½	83½	
Wm. Grube, Mitchell, R.R. 5	Imp. American	16	17	8	17	21½	77½	§1,10
M. Norris, Munro	O. A. C. 72	14½	14	9	18	21½	77	1,15
R. Jarmuth, Bornholm	Granary Filler	15½	13	8	18	22	74½	§1,15
KIRKTON AGR. SOCIETY.								
Judge—Andrew Schmidt, Mildmay.								
A. Bickell, St. Mary's, R.R. 1	Banner	18½	18	9	17	22½	85	1,2
W. Gowan, Science Hill, R.R. 1	do	16½	22	7	19	20	84½	15
Jas. More, St. Mary's, R.R. 1	do	19	15	6½	18½	23	83	1,2
W. Shier, Woodham	Sheffield Standard	17	16	5	18½	22½	77§	1,14
Wm. Harding, St. Mary's, R.R. 1	Banner	15½	18	7½	15	19	75	15,1
W. Switzer, St. Mary's, R.R. 6	Abundance	18	7	8½	18	23	72½	§1
M. Brethour, do R.R. 6	O. A. C. 72	18	4	8	19	22½	71½	15,1,2
Wm. Arthur, do R.R. 1	Abundance	18½	7	9½	15	23	71§	1
H. Switzer, do R.R. 1	Banner	16½	7	8	17	21½	70	12,1,15
STRATFORD AGR. SOCIETY.								
Judge—Jas. Boyd, Markham.								
Ed. Zinn, Stratford, R.R. 1	O. A. C. 72	17½	23	8	18	23	89½	15
Alex. Horne, Gadshill, R.R. 1	do	15	23	9	20	22	89	15
Robt. Thompson, St. Paul's	Yel. Russian	17½	22	9	20	22	88½	§1
W. T. Wood, St. Paul's, R.R. 2	Banner	16½	20	9	18	23	86½	12,15,14
W.W.Ballantyne,Stratford,R.R. 3	O. A. C. 72	16	20	7	20	22	85	15,10,14
J. C. Cook, do R.R. 1	Banner	14½	23	7	18	21	83½	15
W. H. Douglas, St. Paul's,R.R. 2	Yel. Russian	16	18	9	19	23	83§	12,15
Jas. Bradley, Stratford, R.R. 1	do	15	21	8	19	21½	82½	§15
D. M. Ballantyne, do R.R. 3	do	16½	18	9	18	22½	82½	§1,15
N. Monteith, do R.R. 2	Imperial	16	18½	8	19	22	81½	§1
M. Wilhelm, do R.R. 1	White King	13	22	8	18	22	81§	15
Roy Rennie,New Hamburg,R.R.3	O. A. C. 72	14	21½	8	18	19	80½	15
J. Schmidt, Stratford, R.R. 1	Danish Island	16	18	8	18	22	80§	10,15
Jno. Rutherford, do R.R. 1	Yel. Russian	14½	18	8	18	23	79½	§10,15
Jno. H. Berg, do R.R. 1	Banner	15	20	7	15	22	79	15
Wm. J. Robertson, Stratford, R.R. 1	Danish Island	14½	21	8	16	20½	78§	15
J. Litt, Sebringville, R.R. 1	Banner	14	16	9	19	19½	77½	12,15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

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PERTH.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
STRATFORD AGR. SOCIETY.—*Con.*								
H. Stewart, St. Paul's, R.R. 2	Yel. Russian	14½	16	8	19	22	77½	§1,15
Jas. A. Crerar, Shakespeare	Banner	14	17	8	18	20	77	1,15
C. W. Dunsmore & Sons, St. Paul's	Reg. Banner	14½	16	8	16	22	76½	15,10
Jno. Fraser, Stratford	Egyptian	15½	14	9	13	22½	72§	1,15,14
PETERBOROUGH.								
EAST PETERBOROUGH AGR. SOCIETY.								
Judge—W. H. C. Roblin. Ameliasburg.								
Sargant & Sons, Westwood	O. A. C.	½	22	8	18	22½	88	
Thompson Bros., Indian River, R.R. 3	do	16	22	8	18	22	86	
R. A. Scott, Norwood	Banner	16	22	8	20	19	85	
P. M. Grover, do	O. A. C.	16	20	8	18	20	82	
E. Hogg, Norwood, R.R. 4	Imp. Abundance	14	21	7	18	18	76§	
W. C. Brackenridge, Westwood	O. A. C.	14	18	8	15	19	74	
W. W. Scott, Norwood	do	14	15	8	15	20	72	10
OTONABEE AGR. SOCIETY.								
Judge—E. H. Purdy, Port Perry.								
W. A. Nelson, Keene, R.R. 1	Danish Swede	18	23	8	20	25	92§	
M. O'Keeffe, do R.R. 1	Banner	17	22	8	18	25	90	4
Jno. E. Manley, Peterboro, R.R. 8	Abundance	20	20	8	20	22	88§	
S. McIntyre, Keene, R.R. 2	do	19	20	10	18	22	87§	15
W. A. Drummond, Peterboro, R.R. 8		20	15	8	20	25	86§	10
S. M. Comrie, Peterboro, R.R. 8	Abundance	20	16	7	18	25	84§	
H. McFarlane, do R.R. 8	O. A. C. 72	16	15	8	20	23	82	
R. E. Drummond, do R.R. 8	Banner	19	10	10	18	24	81	12
G. E. Kent, do R.R. 8	E. Prolific	17	22	8	12	20	77§	
W. Bishop, Keene, R.R. 1	Wide Awake	15	20	8	15	17	73§	14,10
PETERBOROUGH IND. AGR. SOCIETY.								
Judge—Geo. McKague, Woodville, R.R. 4.								
R. A. Wilson, Peterboro, R.R. 6	O. A. C. 72	16½	23	8½	19	20½	87½	10,15
W. Steinkrauss, do R.R. 2	New Century	17½	21½	8½	19	21	85½	§11
O. B. Mann, do	Yel. Russian	17½	21	9	18½	20½	84½	§14
H. G. Webber, do R.R. 3	Imperial	17	20	9	19	20	83§	11
R. J. Waller, do R.R. 3	do	15½	23	9	16½	20½	82½	§10,15
Jas. D. Fowler, do R.R. 4	Prolific	16	21	9	18	20	82§	
R. A. Garbutt, do	Danish	15½	18	9	18	20	78½	§15,10
Wm. Whittington, do R.R. 3	Banner	17½	10	9	16	21	23½	1,11

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OATS.

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PRESCOTT.		(20)	(25)	(10)	(20)	(25)	(100)	
ALFRED AGR. SOCIETY.								
Judge—Geo. R. Bradley, Kars.								
A. Charbonneau, Alfred	Banner	18	24	8½	19	23	92½	4
Daniel Charbonneau, Alfred	do	16½	23	8	18½	22	88	4, 12
Oscar Parisien, do	do	16½	22	8	18½	21½	86½	4, 12
M. Leroux, Plantagenet	do	16	22	7½	18½	22	86	4, 15
E. St. Denis, do	do	16½	22	8	18	21	85½	4
E. Parisien, Alfred	do	16½	22	7½	18½	20½	85	4, 15
Fred. Provost, Plantagenet	do	16	21	8	17	22	84	
J. Bte. Rouleau, Alfred	do	16½	20	7	19	20½	83	15, 4
F. Daoust, do	do	16½	18	8	19	21	82½	15
Jos. Robillard, do	do	16	20	7	17	21½	81½	4
J. A. Cadieux, do	do	16½	20	7	18	20	81½	
A. Bissonnette do	do	15	18	7½	19	21½	81	
Geo. Barbarie, Plantagenet	do	15½	21	7	16	21	80½	
Samuel Parisien, Alfred	do	15½	19	7½	18	20	80	15, 4
A. Daoust, do	Washington	14½	20	7½	18	20	80	4
E. Dupont, Curran	Banner	14½	20	7½	17	20	79	4
O. Grattan, Alfred	do	15	18	7½	19	19½	79	15, 5
J. Bte. Gratton, Alfred	do	16	17	8	18	20	79	15, 4
D. Parisien, do	do	14	20	7	17	20½	78½	4, 15
P. Boileau, do	do	13½	20	7	18	19½	78	4, 12
P. Gow, Plantagenet	do	15	16	7	18	21	77	
Alex. Langevin, Alfred	do	15½	17½	7	15	20½	75½	5, 4
Alex. Shane, Plantagenet	do	13	18	8	17	19½	75½	4
J. Brisebois, Alfred	do	14	17	6½	15½	22	75	15, 4
PRINCE EDWARD.								
PRINCE EDWARD AGR. SOCIETY.								
Judge—Jas. McLean, Richmond Hill.								
J. E. Huff & Son, Bloomfield	O. A. C. 72	16½	22	8	19	20½	86	15
Matthie Bros. do	do	16	20	8½	19	21	84½	10
A. McDonald, Woodrous	do	16½	22	6	17	20½	82	15
Ed. Purtelle, Bloomfield	Rennie's Yielder	15½	20	6	17½	19½	76½	815
H. A. Anderson, Hillier, R.R. 1	Banner	14½	19	6½	18	18	76	10, 15
B. R. Leavens, Bloomfield	O. A. C. 72	14½	18	5½	18	18½	74½	15, 14
D. E. Ackerman, Picton, R.R. 6	do	17	18½	5	17½	18	74	10
SOPHIASBURG AGR. SOCIETY.								
Judge—Jas. McLean, Richmond Hill.								
E. W. Gorsline, Demorestville	O. A. C. 72	17	23	7½	19	20½	87	14
K. Spafford, Picton, R.R. 8		16	22½	7½	18	20½	84½	14
Trumbel Bros, do R.R. 8	Banner	13	17	6½	18	19½	74	15
A. F. Rightmyer, do R.R. 8	do	11	20½	6½	18	17½	73½	15
W. Rightmyer, do R.R. 8	do	12	19	6	18	17½	72½	10, 15, 14

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OATS.

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RAINY RIVER.		(20)	(25)	(10)	(20)	(25)	(100)	
ATWOOD AGR. SOCIETY.								
Judge—G. H. Farmer, S.S. Marie, R.R. 2.								
F. Gosselin, Rainy River	Golden Rain	18	19½	8	19	24½	89	2
Jos. Gagnon, Pinewood	O. A. C. 72	17½	15	9	16	24½	82	15
D. J. Ewald, Rainy River	Banner	18	10	7	19	24	78	
A. R. Reid, Pinewood	Leader	17½	10	8	18	24	77½	2, 15
F. E. Longhurst, Sleeman	Banner	18	9	8	17	24	76	2
J. J. Hodges, Rainy River	do	18	8	8	17	24	75	2, 15
L. J. Armstrong, Sleeman	do	17	8	8	16	24	73	2. 15
R. A. Armstrong, do	do	17	8	8	15	24	72	2, 15
J. A. Hunter, do	Sheffield Standard	15½	10	8	15	22	70½	2, 15
RENFREW.								
COBDEN AGR. SOCIETY.								
Judge—Robert McKay, Maxville.								
A. Johnston, Cobden, R.R. 4	O. A. C. 72	16½	22	7½	19	21½	86½	15, 4
J. C. Bulmer, do R.R. 1	Banner	14½	22½	6½	19	14½	77	10, 4, 15
Thos. Smith, do R.R. 3	O. A. C. 72	13	23	8	16	14½	74½	10
Thos. Burgess, do R.R. 3	do	13	20	8	18	15	74	
W. J. Connelly, do	do	13½	20	6	16	16½	72	15, 10
E. Kinny, Pembroke, R.R. 2	Tartar King	16	12	7½	18½	17½	71½	10, 4, 5
A. T. Graham, Cobden, R.R. 3	O. A. C. 72	13	24	7	15	12	71	
L. McBride, do R.R. 3	do	11	23	6	18	12½	70½	
Jos. T. Edwards, do R.R. 3	Banner	11½	23	8	16	12	70½	15
Saml. McMillan, do R.R. 6	O. A. C. 3	13	24	5	16	12	70	
NORTH RENFREW AGR. SOCIETY.								
Judge—S. G. Gourlay, Kinburn.								
Jno. A. Brown, Beachburg	O. A. C. 72	18½	24½	7½	17	21½	89	
S. McClelland, do	do	17	23	18	18	21½	87½	
Jos. Keyes, Westmeath, R.R. 2	Banner	18	23½	7½	18	20	87	
G. McClelland, Beachburg	do	18	24	7	15½	21	85½	
Wm. McClennan, Cobden	Imperial	16½	24	7	15	21	83½	
Robt. A. Fraser, Forester's Falls	O. A. C.	16½	21	8	17	20	82½	10
A. Munroe, Beachburg, R.R. 2	do	15½	21	7	18	18½	80	
Jno. W. Buchanan, Beachburg	do	16½	20	7	15	15	73½	
A. R. Bulmer, Westmeath, R.R. 2	do	13½	16	7	18	18	72½	10
SIMCOE.								
BARRIE AGR. SOCIETY.								
Judge—R. E. Mortimer, Honeywood.								
J. W. Black, Stroud	O. A. C. 72	15	22	6	16	16	75	
Thos. G. Scythes, Thornton	Early Lincoln	15	20	7	17½	14½	74	15
W. L. Russell, Midhurst	Gunson's G. Filler	15	20	4	18	14	71	15, 14
R. F. Carscadden, Edgar	O. A. C. 72	15½	18	8	16	23	70½	15
R. N. Hickling, Barrie, R.R. 2	do	14½	20	7	17	11½	70	15

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OATS.

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SIMCOE.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
COLDWATER AGR. SOCIETY.								
Judge—Alex. Morrison, Creemore, R.R. 2.								
Chas. Spence, Lovering	O. A. C. 72	15½	22	8½	17	22	85	
O. Swan, Victoria Harbour, R.R. 1	Golden Drop	15	23	8	17	20½	83½	
W. N. Ryan, Coldwater	Am. Beauty	14½	22	8	17	21½	83	14
Chas. Gratrix, Waubaushene, R.R. 1	O. A. C. 72	14	22	8	18	20½	82½	
Alf. A. Hawke, Coldwater, R.R. 3		14	22	8	17	20½	81½	
R. A. Walker, do R.R. 3	O. A. C. 72	16	17	8	17	22	80	1, 15
L. Archer, Lawson	Ligowa	13½	20	7	17	19½	77	15
Wm. Gladall, Coldwater, R.R. 1		16	16	8	14	21	75	10, 1
L. Taylor, Victoria Harbour	$1,000	13	17	7	18	19	74	2
J. J. Shields, Waubaushene, R.R. 1	Prince Royal	12½	15	8	16	20½	72	1, 15
B. Durnford, Coldwater, R.R. 1	Banner	14½	16	6	16	18½	71	2
W. J. Walker, do R.R. 3	O. A. C. 72	11½	20	6	18	14½	70	15
NOTTAWASAGA AND GT. NORTHERN AGR. SOCIETY.								
Judge, R. E. Mortimer, Honeywood.								
David Smith, Smithdale	Banner	17½	17½	7½	18	18	78½	
I. L. Aikins, Creemore, R.R. 2	O. A. C. 72	17	17½	6	17	16½	74	2, 15
Roger Bros., Stayner, R.R. 1	do	16½	12½	9	16	17	71	1
Alex. Morrison, Creemore, R.R. 2	do	15½	17	8	16	13½	70	1
SUDBURY.								
WARREN AGR. SOCIETY.								
Judge—H. L. Goltz, Bardsville.								
F. McDonar, Warren	O. A. C. 72	16½	23	8	18½	22½	88½	10
F. Anderson, Kipling	do	15½	23	9	18½	22	88	
E. A. Bartlett, Warren	do	16	23	8	17½	22½	87	
W. Dixon, Hugel	do	15½	22	8	17½	21½	84½	
G. Nicholson, Warren	Banner	15½	22	7½	17	22	84	15
G. Marlette, do	O. A. C. 72	13½	22	8	18½	20½	82½	
D. Shea, do	Siberian	12	23	8	18	20	81	
N. Fournier, do	Banner	16½	22	5	17	18	78½	15
W. E. Blair, do	O. A. C. 72	17½	14	8	16	21	76½	1
E. Curry, do	do	17½	16	7	16	19½	76	10, 15
H. Montgomery, Warren	do	14	19	6	16	20½	75½	4
W. Godfrey, Hugel	do	13	19	7	16	19	74	15
Jno. Westine, Kipling	Prince Royal	14	16	8	15	20	73	4, 15, 10

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OATS.

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TEMISKAMING.		(20)	(25)	(10)	(20)	(25)	(100)	
CHARLTON AGR. SOCIETY.								
Judge—J. D. McKenna, Loretto.								
Bert Nickerson, Charlton	O. A. C. 72	13½	24	6	18	18	79½	
Jno. Morrisey, do	do	16	22	5	18	18	79	4
O. Attwater, do	O. A. C. 3	13	23	6	18	18	78	
F. H. Kenny, do	do	13	23	5½	18	18	77½	
F. Pummill, do	do	13	22	6	18	18	77	15
Wm. Netherton, Brentha	do	13	23	5½	17	18	76½	
S. Rodgers, Charlton	O. A. C. 72	15	20	5	17	18	75	10, 15
Geo. Gillett, Brentha	O. A. C. 3	13	18	7	18	18	74	9
Jno. McFarlane, Charlton	do	12	18	7	18	18	73	7
N. M. Fraser, do	M. Cluster	12	22	8	12	18	72	
H. W. Netherton, Brentha	O. A. C. 3	12	23½	6	12	18	71½	
Ed. Cuddy, Charlton	O. A. C. 72	9	22	7	16	17	71	
ENGLEHART AGR. SOCIETY.								
Judge—J. D. McKenna, Loretta.								
R. Emerick, Englehart	Banner	16	22	8	18	20	84	
S. Rowelnelson, do	do	16½	21	8	18	20	83½	7
T. S. Woollings, do	do	17	15	9	18	22	81	1
Jos. Tellier, Heaslip	O. A. C. 3	15	22	7	16	20	80	
E. Winlan, do	O. A. C. 72	13	21½	8	16	20	78½	15
A. F. Richmond, Englehart	O. A. C. 3	12	22	8	16	20	78	
F. Kiehna, Brentha	do	12	22	8	18	17	77	
Jno. Allen, Heaslip	do	14	17½	8	18	19	76½	15, 13
Jno. Short, Marter	Banner	13	22	7	18	16	76	
Jno. Neal, Englehart	O. A. C. 3	12	22	8	17	16	75	
Geo. Harman, Heaslip	Banner	12	20	8	17½	17	74½	15
H. Shaffner, Brentha	Abundance	12	22	8	15	17	74	
A. W. Skinner, Englehart	Banner	15	18	7	14½	19	73½	14
Jas. Harman, Heaslip	Imp. Banner	13	17	7	17	19	73	10, 14
Jno. Scott,	O. A. C. 3	12	17	7	17	19	72	15
Geo. Will, Englehart	Banner	12	16	7	17	19	71	
W. S. Edwards, Englehart	do	11	20	7	17	15	70	
MATHESON AGR. SOCIETY.								
Judge—Geo. B. Little Agincourt.								
F. Hoard, Matheson	O. A. C. 3	14	24	8	17	17½	80½	
N. E. Johnson, do	Silver Mine	13½	23	8	16½	17	78	
R. Bishop, do	Rennie's E. Yielder	12	24	7½	16	15½	75	
D. Chalmers, do	O. A. C. 3	12½	16	8½	17	18	72	1
F. Findlay, do	O. A. C. 72	12	23	7	13	16	71	
W. Kirstine, do	O. A. C. 3	12½	18	8½	13	18	70	12

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
TEMISKAMING.—*Con.*		(20)	(25)	(10)	(20)	(25)	(100)	
NEW LISKEARD AGR. SOCIETY.								
Judge—J. Byron Kaye, Bracebridge.								
Geo. Foster, Uno Park	O. A. C. 72	16	23	9	19	20½	87½	
Bruce Kerr, New Liskeard	do	17	22	9	18	20½	86½	15
J. McFarlane do	do	17	22	9	18	20	86	
Wm. B. McFarlane, do	M. Cluster	16	23	7	16	20	80§	
W. R. Peters, Uno Park	Abundance	15	22	9	15	19	78§	
Jas. Carter, New Liskeard	O. A. C. 3	13	21	9	17	19	77§	
D. McKay, do	Abundance	15½	20	9	18	16	76½	§
Geo. Walsh, do	M. Cluster	16	20	8	16	18	76§	
Jno. Grey do	Abundance	15½	20	8	16	18	75½	§
Robt. Jelly, do	O. A. C. 72	15	18	8	16	18	75	2, 15
THUNDER BAY.								
OLIVER AGR. SOCIETY.								
Judge—J. Byron Kaye, Bracebridge.								
Alex. Reid, Murillo	O. A. C. 72	17½	22	9	18	20½	87	
J. R. Hutchison, Slate River	do	17	21	9	18	21½	86½	17
Jno. MacDonald, Murillo	do	16½	20	7	18	20	81½	1
Thos. Yelland, do	Banner	16	20	7	17	20	80	17
G. Bingham do	O. A. C. 72	15½	20	7	18	19	79½	
J. W. McArthur, do	do	15	21	8	17	18	79	15
R. B. Everett, do	Boles No. 10	16	21	7	16	20	78§	
Jas. Hughes, do	Banner	16	18½	8	16	19	77½	4
Chas. Gorton, do	O. A. C. 72	14	20	8	18	17	77	
R. Bingham, do	Rennie's E. Yielder	16	18	8	17	20	77§	
W. McNally, do	Boles No. 10	17	16	8½	16	21	76½	§1. 4
D. E. Caldwell, Baird	Banner	15	18	8	17	18½	76½	
L. Morrow, Murillo	Am. Banner	14	20	7	16	19	76	
Hugh Rice, do	O. A. C. 72	15½	15	9	18	18	75½	1
A. Felker, do	do	13	18	8	18	18	75	10
H. T. Grey, Rosslyn	Banner	14	16	8	18	18	74	1
Wm. Williamson, Murillo	O. A. C. 72	15½	16	7½	17	18	74	1
Ross McKenzie, do	Rennie's E. Yielder	16½	15	8½	14	20½	72½	§1, 17, 15
WHITEFISH VALLEY AGR. SOCIETY.								
Judge—J. Byron Kaye, Bracebridge.								
Jos. Withenshaw, Hymers	O. A. C. 72	17½	23	8½	19	19	87	
F. Sharp, do	Rennie's E. Yielder	17½	22	8½	17	21½	84½	§
Wm. Couch, do	do	17	18	9	17	20	79§	1, 10

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
THUNDER BAY.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
WHITEFISH VALLEY AGR. SOCIETY.—*Continued.*								
Geo. E. Hymers, Hymers	Rennie's Extra Early	15½	22	8	18	17	78½	§15
B. Sutherland, do	O. A. C. 72	14	21	8	18	17	78	
F. W. Hawkes, do	Banner	16	20	8	16	17½	77½	17
H. Wheal, do	O. A. C. 72	15	22	5	17	17½	76½	
H. Hausen, do	do	14	19	8	17	18	76	15
A. Parker, do	do	15½	18	8	16	18	75½	
Jas. G. Couch, South Gillies	do	14	20	8	15	18	75	
D. Williams, Scoble West	do	13	20	8	16	18	75	
Geo. Elchosen, Hymers	Boles No. 10	14	20	8	16	16	72§	
C. D. Blaikie, do	Abundance	12½	21	9	15	16	71½	§
H. P. Sisson, do	do	10½	23	9	15	16	71½	§
VICTORIA.								
EMILY AGR. SOCIETY.								
Judge—Darius McClure, Toronto.								
D. H. Dick, Omemee, R.R. 2	O. A. C. 72	16	21	8	19	21	85	10
R. T. Boyd, do	do	15½	20	8	15	20	78½	
Jno. W. Smith, do	Banner	15½	15	8	17	20	75½	15
A. Sanderson, do	do	13	20	7	18	16	74	10
FENELON AGR. SOCIETY.								
Judge—Darius McClure, Toronto.								
Jno. Knox, Fenelon Falls	O. A. C.	15½	20	8	18	19½	81	
Jno. Lean, Cameron	Yel. Russian	14½	20	7	18	19	78½	1, 14, 15
Wm. Gillies, Fenelon Falls	O. A. C.	12½	23	8	18	15	76½	
Jno. Graham, do	do	15½	22	8	10	20	75½	14
Wm. Hetherington, do	Sensation	15½	15	8	17	18½	74	1
R. Isaac, do	O. A. C.	16	10	8	17	20	71	1
VERULAM AGR. SOCIETY.								
Judge—D. McClure, Toronto.								
Wm. Boyd & Co., Bobcaygeon	Banner	14	23	8	19	21	85	
H. R. Seymour, do	Yel. Russian	14	23	8	19	19½	83½	
Geo. Kimble, do	do	12½	23	7	18	18	78½	
Thos. Cosh, do	Yel. Russian	16½	17	7	19	18½	78	15
E. Long, do	do	14½	18	7	18	18½	76	1, 10
Jno. J. Devitt, do	Banner	13	19	6	18	17	73	
Ross Kimble, do	Ligowa	12½	23	6	18	11	70½	

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
WELLAND.		(20)	(25)	(10)	(20)	(25)	(100)	
BERTIE AGR. SOCIETY.								
Judge—A. Forster, Markham.								
M. W. Sexsmith, Ridgeway, R.R. 2	O. A. C. 72......	17	24	9½	19¾	20	90¼	
J. W. Jewson, Fort Erie, R.R. 1	do	16½	23½	9	19½	19¼	87¾	15
Geo. W. Miller, Stevensville, R.R. 2	do	16½	21½	9½	19¾	20	87¼	10, 15, 14
Wm. Woehl, Bridgeburg, R.R. 1.	do	16¾	22¼	9	19¾	19¼	87	15, 14
Geo. Sexsmith & Son, Ridgeway	do	15½	21½	9	19	19	84	15, 14
J. R. Phillips, Fort Erie, R.R. 1	do	15	21	8	19½	18¾	82¼	10, 14
J. Lejune, Fort Erie	Russian.........	14	22½	9	19½	17½	80½	15, 14
W. J. Wale, Bridgeburg, R.R. 1..	Granary Filler...	14¾	21½	8	19½	18¼	80	15, 14
FENWICK AGR. SOCIETY.								
Judge—A. Forster, Markham.								
J. M. Haist, Ridgeville, R.R. 1..	O. A. C. 72	16¼	24	9¾	19¾	19½	89¼	10, 14
Clemens Bros., Fenwick, R.R. 5	Am. Banner	16	23½	8½	19¾	20¾	88½	15, 14
Geo. Kappler, do R.R. 1	Ligowa	17½	24	9	19½	20	88§	10, 14
J. H. Haist, do R.R. 5	O. A. C. 72	16	24½	8½	19¾	18¾	87½	
Dan'l Haist, Fonthill	do	15	24½	9½	19½	18¾	87¼	14
Jos. M. Leppert, Fenwick	do	16	23	9	19¾	18½	86¼	14, 15
F. C. Haist, Ridgeville, R.R. 1	do	14¾	24	9¾	19½	18	86	14
O. L. Beckett, do R.R. 1	Banner	15¾	22	9¾	19	18¾	85¼	10, 15, 14
Ecker Bros., St. Anne, R.R. 1..	White King	13½	23	9½	18	18	80§	15, 14
H. Stirtzinger, Fenwick, R.R. 5	Imp. M. Chester	14	22½	8½	18½	17¼	78¾	§10, 15, 14
WELLINGTON.								
ARTHUR AGR. SOCIETY.								
Judge—Jno. McDiarmid, Lucknow.								
Jno. Bodendistle, Kenilworth, RR2	Banner	17	20	8	19	22½	86½	2
Jas. Bodendistle, do RR2	do	17	22	7	18	21½	85½	
Alex. Cook, do	O. A. C. 72	17½	22	7½	15	21	83	
Geo. W. Dodge, Arthur	do	14	22	8	18	20	82	2, 15
H. McConnell, do	Banner	17	18	8	16½	22	81½	2
E. Hays, do	do	16	21	7	16	21	81	
H. Cormack, do	Liberty	16	21½	7	17	21	80½	§2, 15
Wm. Hutchinson, do	Newmarket	16½	20	7½	17	21	80§	15, 2
Thos. Banyan, do	Banner	15	20	7½	17	20	79½	2, 15
Wm. Cook, Kenilworth	O. A. C. 72	15	20	7½	16	20½	79	2, 15
M. Gainor, Arthur	Banner	14	20	7	17	20	78	1, 2, 10
P. F. Birns, do	....	14½	18	8	16	20	76½	2, 10
Wm. E. Carbin, do	White Wave	16	17	7½	16	21	75½	§
R. McConnell, do	O. A. C. 72	15	16	7	15	20	73	2, 15
CENTRE WELLINGTON AGR. SOCIETY.								
Judge—Thos. Hall, Brooklin.								
J. L. Benham, Rockwood, R.R. 3	Abundance	16	24	8	19	20	87	
A. A. Armstrong, Fergus	do	17	23	6	18	20½	84½	
L. Sargent, do	Derby	18	23	5	15	22½	83½	10

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
WELLINGTON.—*Con.*		(20)	(25)	(10)	(20)	(25)	(100)	
CENTRE WELLINGTON AGR. SOCIETY.—*Continued.*								
J. H. Anderson, Rockwood, R.R.4	O. A. C. 72	16½	22	7	18	19½	83	14,10
Wm. Hutcheon, Rockwood, R.R. 1	do	14	23	7	20	17	81	15
H. Skeoch, Fergus, R.R. 3......	Imp. Chester....	15	20	8	18	19½	80½	
R. S. Gale, Elora	Granary Fillers..	18	10	9	19	22½	78½	1,15
L. Armstrong, Fergus, R.R. 4..	Banner	13	23	8	16	18	78	
Wm. A. Atkinson, Fergus	O. A. C. 72	12	23½	7	18	17	77½	15
Geo. Pritchard, Elora	Abundance	15	8	8	19	22½	72½	1,11,14,15,12
F. W. Darby, Fergus, R.R. 4....	O. A. C. 72	14½	10	9	18	18½	70	1
ERIN AGR. SOCIETY.								
Judge—J. W. Patton, Rocklyn, R.R. 2.								
S. W. Bingham & Son, Erin, R.R.2	Reg. Banner	19¼	25	8	20	23¾	96	
E. Barbour, Hillsburg	O. A. C. 72	17¾	25	9	20	22¼	94	
Jas. Milloy, Erin	Reg. Banner	18¾	23	9½	20	22½	93¾	4
S. E. Griffin & Son, Acton	O. A. C. 72	18¼	24	8¾	20	22½	93½	
Mac. Leitch, Erin	Reg. Banner	17¼	24	9	20	22¾	93	
H. L. Matheson, Hillsburg, R.R. 2	O. A. C. 72	18¼	25	8	18	22¼	91½	
R. D. Nodwell, Hillsburg	Reg. Banner	16½	23	9	20	21½	90	15
Geo. Overland, Orton	Imp. Banner	17¾	23	8½	20	20½	89¾	
W. H. Burrows, Hillsburg	O. A. C. 72	17½	23	8½	18	22½	89½	
J. W. Burt & Sons, do	Ligowa	17¼	22	8½	19	22½	89¼	14
F. McMillan, do	Reg. Banner	16½	23	8	18	20	85½	
A. Brown, Erin	Abundance	14	20	7	18	20	79	
PUSLINCH AGR. SOCIETY.								
Judge—J. W. Patton, Rocklyn, R.R. 2.								
A. McLean & Son, Puslinch, R.R. 1	O. A. C. 72	17½	25	9½	20	24	96	
P. J. McLean & Son, do R.R. 1	do	17½	23	9½	20	24	94	
Wm. Winer & Sons, Gueph, R.R. 3	Reg. O. A. C.	17	24	9	19	23½	92½	
D. A. McLean, Puslinch, R.R. 1	O. A. C. 72	17¾	25	8	18	23¼	92	
Jno. A. Cockburn, do R.R. 1	do	17	22	9	20	23½	91½	14
D. A. McNaughton, do R.R. 2	Granary Filler ..	16¼	24½	9	19	22½	91¼	
H. McCuaig, Hespeler, R.R. 2..	O. A. C.	16¾	25	8	19	22	90¾	
Jno. McCormick, do R.R. 2..	do	16½	24	8	20	21	89½	
F. C. Mollison, Guelph, R.R. 6..	do	14½	24	8	19	22	87½	
J. G. W. Barclay, do R.R. 6..	do	15¾	19¾	7½	19½	21	83¼	
ROCKWOOD AGR. SOCIETY.								
Judge—J. A. McDermid. Collingwood, R.R. 2								
A. F. Auld, Guelph, R.R. 2......	Golden Rain.....	13½	20	7	18	18½	77	15
Neil McLean, Rockwood, R.R. 4	do	13½	20	7	17	18½	76	14,15
W. G. Chapman, do R.R. 3	O. A. C. 72	15	18	6	17	15½	71½	14
Chas. H. Harris, do	do	12	18	7	19	15	71	15,10
Jos. Stovell, do R.R. 1	do	14½	18	7	16	15	70½	

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
WENTWORTH.		(20)	(25)	(10)	(20)	(25)	(100)	
ANCASTER AGR. SOCIETY.								
Judge—Jas. A. Cameron, Weston.								
Thos. Calder, Carluke	O. A. C. 72	18	23	8	19	22½	90½	15
E. Lyons, Ancaster	do	16½	23	9	18½	22½	89½	15
T. G. Brown, do R.R. 1	do	16½	22	9	18½	22½	88½	15
W. H. English, do R.R. 1	do	16	22½	9	18½	22	88	15,10
R. B. Calder, Glanford Stn. R.R. 3	do	17	21½	8½	18	22½	87½	15,14
F. Myers, Ancaster, R.R. 2	Banner	17	23	8	18	21	87	15
Wm. E. Shaver, Ancaster, R.R. 1	Am. Banner	16	22	8	18	22½	86½	15
F. Dorr, Hanover	O. A. C. 3	16	22	8	18	22	86	15,14
A. M. Shaver, Ancaster, R.R. 1	O. A. C. 72	16½	19	9	18½	22½	85¼	14,15
N. Shaver, do R.R. 1	do	16	23	8	18	20	85	15
Wm. Grundon, Alberton	do	16	19	8	18	22	83	15,14
Geo. M. Brown, Jerseyville, R.R. 1	do	16	18	9	18	19	80	15,12
J. J. Brown, Ancaster, R.R. 1	Bruce's Conqueror	13	21	9	18	18	79	15,13
J. Oakes, Ancaster	O. A. C. 72	13	18	7	16	19	73	4,15
WEST FLAMBORO' AGR. SOCIETY.								
Judge—Jas. Boyd, Markham.								
Chas. W. Goodbrand, Hamilton, R.R. 2	O. A. C. 72	16	22	8	18	22	86	15,14
Wm. Beaton, Hamilton, R.R. 2	Lincoln	15	20	9	19	21	84	15
Jas. A. Gray, Freelton	Abundance	14½	19	9	19	22	83½	11,15,14
Jno. Gartley, Puslinch, R.R. 3	M. Chester	15	19	8	18	22	82	15,14
Jas. Morrison, Millgrove, R.R. 1	Abundance	13½	20	7	18	20½	79	15,14
H. Wyse, Puslinch, R.R. 3	Lincoln	14	20	8	15½	21	78½	1,15
Geo. E. Kirk, Hamilton, R.R. 2	Swedish Grant	12	21	8	17	20	78	15
Geo. W. Cummins, Puslinch, R.R. 3	O. A. C. 72	14	14	8	19	21½	76½	1,14,15
Wm. Taylor, Greensville	Scottish Chief	20	15	8	12	21	76	15,14
YORK.								
SCARBORO' AGR. SOCIETY.								
Judge—M. W. Sexsmith, Ridgeway.								
McCowan Bros., Scarboro'	Yel. Russian	18	22½	9	20	23	90½	§15
Wm. A. Paterson, Agincourt	Banner	18	23	9	17½	22½	90	
Wm. Loveless, Scarboro Jct., R.R.	Reg. Banner	17½	22½	9	17½	22	88½	
S. Baird, Scarboro Jct.	O. A. C. 72	16	22	9	20	21	88	15
A. P. Wheler, Agincourt	Granary Filler	17	20	9	18	23	85§	14,15
Jas. Scott, do	Imp. Banner	15½	17½	9½	19½	22½	84½	15
F. J. Fisher, do	Granary Filler	18	16	9	16	23½	80½	§
Jno. Underwood, Malvern	Banner	16	19	8	16	18½	77½	15,10
Laurie Bros., Agincourt	Granary Filler	14	17	9	18	21	77§	10,14,15
Jas. M. T. Weir, do	Lincoln	18	10	9	18	23	76§	

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

BARLEY.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
BRANT.		(20)	(25)	(10)	(20)	(25)	(100)	
ONONDAGA AGR. SOCIETY.								
Judge—J. A. Mallough. Dungannon.								
Jas. Pate & Sons, Paris, R.R. 4..	O. A. C. 21	15	21	8	19	21	84	
F. Thomson, Cainsville, R.R. 1..	do	15½	21	8	18	20½	83	
R. J. Robertson, do R.R. 1..	do	15	19	9	18	21	82	
M. N. Simpson, do R.R. 1..	do	15½	19	7	17	22	80½	
H. Preiss, Middleport, R.R. 1...	do	15½	18	7	16	19½	76	
A. W. Vansickle, Onondaga	do	12	17	7	17	20½	73½	10
H. H. Howell, Cainsville, R.R. 1	do	13	16	8	16	20	73	10
Geo. Thomson, do R.R. 1	do	14	17	6	15	19½	71½	15
DURHAM.								
CLARKE TP. AGR. SOCIETY.								
Judge—E. H. Purdy. Port Perry.								
F. J. Brimacombe, Orono	Six Rowed......	17	20	10	18	20	83§	12, 4
E. E. Patterson. do	do	16	18	8	18	22	80§	12
Rich. Luxon. do	Mandscheuri	15	15	7	15	23	75	10, 13, 12
H. R. Pearce, Newcastle	O. A. C. 21	18	12	10	10	23	73	4, 10, 14
A. C. Chapman, Orono	do	13	12	8	15	23	71	12

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*General appearance—Considering stand of crop, type of plant, vigor and uniformity of growth, method of seeding and absence of lodging.

†Yield and quality of grain—Considering proportion of well-filled heads of plump grain of good quality and uniformity of maturity.

‡See key page.

§Points deducted for non-standard variety.

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

FALL WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
GREY.		(20)	(25)	(10)	(20)	(25)	(100)	
KILSYTH AGR. SOCIETY.								
Judge—E. I. McLoughry, Markdale.								
V. Barber, Owen Sound, R.R. 4..	Dawson's G. Chaff	19½	21	8	19	24	91½	15
C. A. Bowman, Kilsyth	do .	18	21½	9½	19	23	91	14, 15
O. R. Smith, Owen Sound, R.R. 4	do	18	21	9	19	22	89	15
R. S. Mundle, do R.R. 3	do	18½	21	9½	17½	22	88½	15
H. V. Hewitson, do R.R. 5	do	18	20	9	18	23	88	15, 12
Jas. Radbourne, Tara, R.R. 4..	do	17½	21	9	18	22	87½	14, 15
D. T. Waddell, Kilsyth	do	18	20½	9	18½	20½	86½	15
Wm. H. Marshall, Tara, R.R. 4	do	17	21	9	17	22	86	15, 14
J.Greig&Son, Shallow Lake,R.R.2	do	17	20	9	18	21½	85½	
Wm. E. Dunn, Owen Sd., R.R. 3	do	18	20	9	15	22½	84½	15, 16, 14
Geo. Wylie, Kilsyth	do	16½	21½	9½	17½	19½	84½	15
OXFORD.								
NORTH NORWICH AGR. SOCIETY.								
Judge—D. McClure, Toronto.								
Rettie Bros., Norwich	Dawson's G. Chaff	16	23	9	19	23	90	15
E. B. Palmer, do	do	15½	23	9	19	22	88½	15, 14
Geo. A. Poole, Harley, R.R. 2..	do	15½	22	8	19	23	87½	15, 14, 10
Chas. N. Hilliker, Burgessville..	do	15½	23	7	18	23	86½	15, 14, 9, 10
H. Jull, Norwich, ...	do	16	21	8	19	22	86	14, 10, 15, 9
B. G. Palmer, do	do	15	22	8	19	21	85	9,15,14,13,12
D. Hutchison, Burgessville	do	15½	21	7	18	19½	81	10, 14, 16
Chas. E. Butler, Norwich, R.R. 4	do	13	22	7	18	18½	78½	13, 15
F. Hilliker, Norwich	do	14½	18	7	17	20½	77	15, 14, 16, 9
W. Lossing, do	do	12	23	6	17	15	73	9, 15, 14
E. D. Hilliker, Burgessville	do	14	19	5	18	15½	71½	14, 15, 16
PERTH.								
KIRKTON AGR. SOCIETY.								
Judge—A. Forster, Markham.								
Wm. Ratcliffe, St. Mary's, R.R. 1	Dawson's G. Chaff	19½	24½	9¾	19½	24¾	98	15
Jas. More, Kirkton	do	18	24	9	19½	24¼	94¾	15, 14
Wm. Denham, St. Mary's, R.R. 1	do	18¼	23½	8¾	19¾	24¼	94½	15, 14, 16
D. Rogers, do R.R. 1	do	17¼	24	9	19½	23¾	93½	15, 14
P. Madge & Son, Woodham	do	18½	23	9½	18	24	93	16,14,15,12
W. Gowans, Science Hill	do	17	23	9½	19½	23½	92½	15, 16
D. Hazlewood, Kirkton	do	17	23½	9½	19	23¼	92¼	15, 14
M. Gregory, do	do	16¼	24	9¾	19½	22½	92	15, 14
Wm. Urquhart, St. Mary's, R.R. 1	do	16½	23½	8½	19½	23½	91½	15, 14

*General appearance—Considering stand of crop, type of plant, vigor and uniformity of growth, method of seeding and absence of lodging.

†Yield and quality of grain—Considering proportion of well-filled heads of plump grain of good quality and uniformity of maturity.

‡See key page.

§Points deducted for non-standard variety.

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

FALL WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
PERTH.—*Con.*		(20)	(25)	(10)	(20)	(25)	(100)	
KIRKTON AGR. SOC.—*Con.*								
Wm. Harding, St. Mary's, R.R.1	Dawson's G. Chaff	16	23	9½	19½	23	91	15,14
Jno. Hackney, Kirkton	Imp. Amber	18	21¾	9	19	23	90¾	12,3,14,1,5,1
A. Bickell, St. Mary's, R.R. 1	Dawson's G. Chaff	15½	24	9	19½	22½	90½	15.14
D. Kemp, do R.R. 1	do	16½	22¾	8½	19	23½	90¼	3,15,14,16
Jos. Creary, Woodham	Abundance	17	22½	9½	19	24	90§	14,15,16
Jno. Moore, Kirkton	do	17½	23½	9	18	23¾	89¾	§12
W. Shier, Woodham	Dawson's G. Chaff	15¾	22¼	9¾	19¾	22¼	89¾	4,15,14,13.16
H. Switzer, St. Mary's, R.R. 1	Abundance	17	22	9	19	23¾	88¾	§3,12,15,14
Thos. Bruce, Science Hill	Dawson's G. Chaff	17½	19	9	18	23¼	86¾	15,10,3,14
Robt. S. Brown, St. Mary's, R.R. 1	Abundance	16	21½	9	18½	23½	86½	§3.8.15.14,16
Jno. Simpson, Kirkton	do	17	21	9½	16½	23½	85½	§3,15,14,16
H. Craig, St. Mary's, R.R. 1	do	15¾	23	8¼	17	22¼	84¼	§3,15,14,16
Ray Francis, Kirkton, R.R. 1	Dawson's G. Chaff	17½	14½	9	18½	23	82½	15,14,16,1
Wm. Arthur, St. Mary's, R.R. 1	Abundance	16½	13½	9½	19	23	79½	§1,15,14
H. Chittick, Science Hill	do	17	12½	9	19	23½	79§	1,15,14,16
C. Routley, Kirkton	Dawson's G. Chaff	18½	7	9½	19½	23½	78	1,16
M. Brethour, St. Mary's, R.R. 6	do	17	5½	9½	19½	22¾	74¼	1,10.4,14,15,16
W. Neil, Kirkton	Imp. Amber	18	4	8½	18½	23½	72½	1,4,3,15,14
Hugh Berry, Woodham	Abundance	17½	5	9	18½	24	72§	1,12,14,15,16,1
VICTORIA.								
VERULAM AGR. SOCIETY.								
Judge—A. J. Thompson, Toronto.								
Thos. Kingsboro, Dunsford	Sleep and I'll pay the rent	16	24	8	19	22½	87½	§
D. Hetherington, Bobcaygeon	do do	16½	23	9	16½	23½	86½	§10
Jos. N. Taylor, Dunsford	do do	15½	24	8	17	22½	85§	15
R. E. Thurston, Bobcaygeon	do do	14	18½	8	16½	22	77§	10,15,14
A. S. Brock, do	do do	10½	24	9	16	18	75½	§15
D. Lewis, Dunsford	do do	14½	17	7	19	19	74½	§15,14
Geo. W. Martin, Bobcaygeon	do do	13	20	6	16	20½	73½	§15,14
H. R. Seymour, do R.R. 3	do do	13	19	7½	16	19½	73§	
Thos. Cosh, do R.R. 1	do do	13	20	7	16	18	72§	
Jno. H. Taylor, do R.R. 2	do do	14	20	5	16	18½	71½	§15
WATERLOO.								
SOUTH WATERLOO AGR. SOCIETY.								
Judge—A. J. Thompson, Toronto.								
Robt. E. Cowan, Galt, R.R. 3	Dawson's G. Chaff	17	24	8½	19½	23½	92½	
Geo. R. Barrie, do R.R. 7	do	17	24½	8½	19½	22½	92	
I. Hilborn, New Dundee, R.R. 1	do	17½	23	9	19¼	23	91¾	15,14,10
Wm. Gillespie, Galt, R.R. 5	do	16½	24	9½	19½	22	91½	15
Jno. Brown & Sons, Galt, Box 23	do	17½	23	9	18	22	89½	3
J. H. Sherk, Kitchener, R.R. 5	do	17½	21	9	16½	23	87	15,14,16
Thos. Young, Galt, R.R. 4	do	14	24	8	19½	21	86½	15,16

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

FALL WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
WATERLOO.—*Con.*		(20)	(25)	(10)	(20)	(25)	(100)	
SOUTH WATERLOO AGR. SOCIETY. —*Continued.*								
Jas. S. Wallace, Galt, R.R. 4 ..	Golden Jewel ...	17	24	9	17	21	86⅔	15
Sam'l Rohr, Ayr, R.R. 1	Dawson's G. Chaff	16	22	8	17	22½	85½	15,3
Miss K. L. Wilks, Blair	do	16	20	9	18	22	85	10
D. & R. Arthur, Branchton, R.R.1	do	15½	22½	7	17	21½	83½	3
A. G. Taylor, Galt, R.R. 7	do	15	20	9	18	21	83	9,3,15,16
Geo. P. Moore, Galt, R.R. 7....	Dawson's G. Chaff	15½	21	7½	17	21	82	15,16,9
Arch. Wallace, do R.R. 4....	Golden Jewel	16	23	7	17	20½	81½	⅔15
E. Z. Kemkes, Brachton, R.R. 1	Dawson's G. Chaff	14½	21	8	18	20	81½	16,3
Robt. S. Oliver, do R.R. 1	Golden Jewel ...	16	20	8	18	21	81⅔	3,16
Wm. Johnston, Galt, R.R. 7....	Dawson's G. Chaff	14	21	9	19	17½	80½	15,14,10
Jas. Lake, do R.R. 7....	do	14½	23½	6	16	20	80	15,16
Wm. C. Shaw, Hespeler, R.R. 2..	do	13½	23	6	17½	19½	79½	15,14
A. S. Clemens, do R.R. 1..	do	12	22	7	19	19	79	15
J. R. Wood, Preston, R.R. 2.....	do	15	20	6½	16	21	78½	15,14
E. G. Hallman, Ayr, R.R. 1.....	Golden Jewel ...	13	20	9	16	19	75⅔	3,15,16,14
C. T. Groh, Hespeler, R.R. 1...	Dawson's G. Chaff	14	20½	5	15	20	74½	14,15
T. M. Jamieson, do R.R. 1...	"	12	22	6	14	19	73	15
A. Turnbull & Sons, Galt, R.R. 3	do	12	20	7	15	18	72	
WELLINGTON.								
PUSLINCH AGR. SOCIETY.								
Judge—Jas. Boyd, Markham.								
W. Winer & Sons, Guelph, R.R. 3	Imp. Amber	18	23½	9	20	23	93½	14
P. McLean &Son, Puslinch, R.R. 1	do	16½	22	9	18½	23	89	10,15,16
A. Scott, do R.R. 1	Abundance	17½	22	8	18	22½	88	9,13
Jno. A. Cockburn, do R.R. 1	Dawson's G. Chaff	13½	24	9	19½	21	87	
D. McGarr, Guelph, R.R. 6......	Abundance	16½	24	8	16	22	86½	8,13
Chas. Currie, Morriston	Mogul	15½	22	8½	17	23	86	9,10
F. C. Mallison, Guelph, R.R. 6..	Dawson's G. Chaff	16½	23	8	15	22	84½	15,9
M. Walsh, do R.R. 3..	do	16½	20	9	16	22½	84	13,10,15
T. J. Mahon, do R.R. 3..	Imp. Amber	15½	20	8	18½	21½	83½	14,16,13
Jas. Barclay, do R.R. 6..	White Jewel	14	23	8	18	20	83	15,16
Jno. Hohenadel, Puslinch, R.R. 1	Abundance	13	23	8	17	21	82	15,13
Jno. Walsh, Guelph, R.R. 2......	Dawson's G. Chaff	15½	19	9	17	21	81½	13,14,11
F. Paddock, Hespeler, R.R. 2...	Jewel	14½	20	8	18	20½	81	13,15
R. E. Paddock, do R.R. 2...	do	13	21	8	18½	20	80½	16,13,15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

SPRING WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
ALGOMA.		(20)	(25)	(10)	(20)	(25)	(100)	
ST. JOSEPH ISLAND AGR. SOCIETY.								
Judge—Henry Knight, Jr., Sault Ste. Marie.								
Geo. Hadden, Richard's Landing	Marquis	16½	24	8	18	22	88½	
H. Matheson, do	do	15½	20	9	17	22½	84	4, 17
Geo. Smedley, do	do	13	24	8	18	20½	83½	15
Alex. Morrow, do	do	15	22	8	18	20	83	15
Rains Bros., Sea Gull	do	15	22	8	18	19	82	14
A. W. Stableforth, Richard's Landing	do	15	17	9	18	22	81	15
Victor Rains, do	do	16	16	8	18	22	80	15, 1
Chas. Young, do	do	16	17	8	18	20	79	15
Wm. Lee, do	do	14½	17	8	18	21	78½	15, 4
Jno. Campbell, do	do	15	20	8	14	21	78	15, 4
Thos. White, do	do	14	23	8	19	12½	76½	
Jno. Fyfe, do	Bearded	14½	18	7	16	20	75½	4, 15
Raymond Rains, do	Marquis	16	17	9	10	22	74	15
Mrs. A. W. Ross, do	do	13	16	8	18	19	74	15, 17
BRUCE.								
CARRICK AGR. SOCIETY.								
Judge—J. A. Kernahan, Maxwell.								
Thos. H. Jasper, Carlsruhe, R.R. 1	Marquis	18	25	8	19	21	91	
S. Schmidt, Formosa	do	17	22	7	20	21½	87½	
Andrew Schmidt, Mildmay	do	16	23	8	17	20½	84½	10
Jas. L. Tolton, Walkerton, R.R. 3	do	16½	23	7	18	19½	84	15
Jos. McKague, Teeswater	do	17	24	7	19	16½	83½	
Jno. Lints, Mildmay	do	16½	20	8	16	20	80½	1, 15
Jno. Bickel, do R.R. 4	do	16	15	6	16	20½	73½	1
Geo. B. Armstrong, Teeswater	do	15	15	6	16	21	73	15, 1
CHESLEY AGR. SOCIETY.								
Judge—Geo. E. Foster, Honeywood.								
Thos. Oswald, Chesley	Marquis	15	24	8	14	18½	79½	
Mrs. Jos. Maxwell, Chesley	do	15½	15	8½	18	19	76	1
Jno. Oswald, do	do	14½	24	6	12	18½	75	
Robt. Sloan, do	do	14	20	7	14	19	74	
Robt. Oswald, do	do	13	24	7	14	14½	72½	
Jas. Crerar, do	do	14	20	6	15	17	72	14, 15

*General appearance—Considering stand of crop, type of plant, vigor and uniformity of growth, method of seeding and absence of lodging.

†Yield and quality of grain—Considering proportion of well-filled heads of plump grain of good quality and uniformity of maturity.

‡See key page.

§Points deducted for non-standard variety.

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

SPRING WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
BRUCE.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
LUCKNOW AGR. SOCIETY.								
Judge—Jas. McNeil, Maple.								
H. Rutherford, Lucknow, R.R. 2	Marquis	14	20	8	16	17	75	15
Jno. Webster, do	do	14	19	6½	17	18	74½	15
Wm. Rutherford. do	do	14	20	8	16	16	74	
Roy Alton, do R.R. 7	do	15	16	8	17	17½	73½	15
Samuel Phillip, do R.R. 2	do	13	20	7	17	15	72	
F. G. Todd, St. Helens, R.R. 2	do	16	12	7	16	20	71	1
CARLETON.								
FITZROY AGR. SOCIETY.								
Judge—Peter Wilson, Cobden.								
J. E. Armstrong, Kinburn	Marquis	16	23	9	19	24	91	
J. L. Hunt, Galetta	do	18½	21	8½	17½	23	88½	10
F. R. Gourlay, Kinburn	do	17	22	8½	18	22	87½	10
P. M. Herrick, Galetta	do	16	23	8	18	19½	84½	10
H. Miller, do	do	13½	20	8½	19	21	82	10, 15
A. J. Halpenny, do	do	17	15	9	17	21½	79½	10
L. Stewart, Arnprior	Red Fife	16	16	8½	17	19	76½	15, 10
A. L. Riddell, Kinburn	do	15	15	8	18	19	75	
DUFFERIN.								
DUFFERIN AGR. SOCIETY.								
Judge—R. E. Mortimer, Honeywood.								
W. H. Gillespie, Orangeville, R.R. 1	Red Fife	18	18	8	18	19½	81½	4, 10
Josh. Bradley, Amaranth Stn.	Marquis	17½	15	8	15	19	74½	1, 15, 10, 4
Wm. Hunter, Orangeville	do	16	18	7	14	18	73	15, 13
W. H. Hunter, do R.R.2	do	16½	15	8	17½	15	72	14, 15
EAST LUTHER AGR. SOCIETY.								
Judge—R. McCowan, Scarboro.								
W. C. Turner, Grand Valley, R.R. 3	Marquis	17	20	6	16	21	80	
Robt. Fuller, Grand Valley, R.R.3	do	18	20	6	14	20	78	
G. M. Richardson, Grand Valley, R.R. 3	do	16	20	4	18	18	76	1
E. Dixon, Arthur, R.R. 2	do	18	13	6	16	20	73	1
DURHAM.								
CLARKE TP. AGR. SOCIETY.								
Judge—F. W. Rilance, Beaverton.								
J. Allin & Son, Orono	Marquis	18	22	8	17	22½	87½	15
Colin Colville, Bowmanville, R.R.4	do	17	22	8	18	22	87	15
E. E. Patterson, Orono	do	16	22	9	18	21½	86½	1

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

SPRING WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
DURHAM.—*Con.*		(20)	(25)	(10)	(20)	(25)	(100)	
CLARKE TP. AGR. SOCIETY.—*Con.*								
C. A. Chapman, Orono	Marquis	15½	23	8	19	20½	86	
A. E. Morton, do	Prince Imperial	14½	22	10	19	21	84½	?
F. Brimacombe, do	do	15	20	10	19	22	84?	1
D. J. Gibson, Bowmanville, R.R. 4	Marquis	16	20	8	17	22½	83½	1, 4, 15
J. L. Chapman, Orono	do	16	18	9	18	21	82	
W. D. Bragg, Newcastle	do	17	15	8	18	21	79	1, 15, 4
J. D. Brown, Orono	do	16	14	8	17	21	76	1, 15
A. A. Colwell, Newcastle	do	16½	12	7	18	21	74½	1
H. Jose, do	do	16	8	9	18	23	74	1
MILLBROOK AGR. SOCIETY.								
Judge—J. J. Virtue, Hampton.								
D. Sutton, Millbrook, R.R. 3	Marquis	16	23	9	19	22½	89½	15
N. Henry, do R.R. 2	Fife	14	24	10	20	20	88	15
W. Sharpe, Ida	Marquis	16½	22	9	18	21	86½	4, 15
L. Fallis, Millbrook, R.R. 3	do	15	22	9	19	21	86	4, 10
J. L. McCamus, Millbrook, R.R. 2	do	14½	23	9	18	19½	84	
R. O. Larmer, do R.R. 1	do	15	20	8	18	20	81	15
R. J. McKnight, do	do	14½	15	9	18	20	76½	
F. Anderson, S. Monaghan	do	13	15	9	18	20	75	1, 4
WEST DURHAM AGR. SOCIETY.								
Judge—H. R. Blakely, Eldorado.								
R. E. Osborne, Bowmanville, R.R. 2	Marquis	15½	23	8	17½	21	85	
J. F. Osborne, Newcastle	do	15½	22	7	18	22	84½	4
A. W. Annis, Tyrone	do	13	20	6	19	20	78	15, 10
N. L. Richard, Newcastle	do	16½	15	7	17½	20½	76½	1, 10
J. Baker, Hampton, R.R. 1	do	11	22	8½	15	19	75½	15
W. E. Jewell, Bowmanville, R.R. 4	do	17	10	8	19	21	75	1
T. C. Jackson, do R.R. 4	do	15	11	7	18	20½	71½	1
L. T. Pascoe, Hampton, R.R. 1	do	11½	20	6	15	18	70½	15, 10
GREY.								
MARKDALE AGR. SOCIETY.								
Judge—Wm. Hudd, Orangeville.								
Earl Davis, Markdale	Marquis	19	23	9	19	23	93	15
Jos. Buchanan, Flesherton, R.R. 2	do	19½	23	8	19	23	92½	15
Jas. Findlay, Markdale	do	18	23	8½	18½	23½	91½	1, 14
E. & Jas. McLoughry, Markdale	do	18	22	9	19	23	91	15
F. Boland, do R.R. 4	do	18	20	8½	20	22	88½	1, 15
T. L. Mercer, do		17	20½	9	19½	21½	87½	1
A. D. Irwin, do	Marquis	17	22	8	19	21	87	15
Ed. Baker, do R.R. 4	do	17	20	9	17	22	85	15
A. Tolton, do R.R. 5	do	18	18	8	19	21	84	15
W. J. Hamilton, do R.R. 5	do	16½	21	8	17	20½	83	

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

SPRING WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
GREY.—*Continued.*		(20)	(25)	(10)	(20)	(25)	(100)	
ROCKLYN AGR. SOCIETY.								
Judge—Geo. W. Glover, Nottawa.								
M.E.Abercrombie,Meaford,R.R. 4	Marquis	20	9¾	10	19¾	25	84½	1
J. A. Perry, do R.R. 4	do	20	9½	10	19¾	25	84¼	1,14
C. F. Fisher, do R.R. 4	do	18¼	9½	10	19½	24	81¼	1
Jno. Yeadell, Rocklyn, R.R. 2	do	16½	9¾	9¾	19¾	23	78¾	1
W. Patton, do	do	16½	9½	9¾	19½	23	78¼	1,14
W. Thomson, Meaford, R.R. 4	Rio Grande	20	9½	10	15	25	77½	24,1
Thos. Langtree, do R.R. 4	Marquis	15	9½	10	19½	23	77	1
W. R. Perry, Rocklyn	do	15	9¾	10	20	22	76¾	1
Jno. McKnight, Meaford, R.R. 4	do	16¾	9½	8¼	19¾	22½	76¾	1
G. L. Sewell, do R.R. 4	do	16¼	9¾	10	19¾	21	76¾	1
W. H. Sewell, Blantyre	do	16¼	9¾	9¾	19	22	76¾	1
HASTINGS.								
STIRLING AGR. SOCIETY.								
Judge—W. J. Barber, Rossmore.								
A. Hatfield, Stirling	Colorado	13½	22	8½	18	21½	83½	15
Jas. A. Bailey, Stirling	Marquis	13½	22	8½	18	19	81	15
Geo. Drewry, Harold, R.R. 1	Colorado	16½	12½	9	19½	21	78½	15,1
C. W. Thompson, Stirling	Marquis	11½	20	9	18	18	76½	15,10
Thos. J. McGee, do	do	13½	18	7½	18	19	76	15,10,4
HURON.								
HOWICK AGR. SOCIETY.								
Judge—E. I. McLoughry, Markdale.								
Jno. Bryans, Fordwich	Red Fife	17	17	8	18	21½	81½	1,15
Jno. Wiley, Gorrie	Marquis	17½	14	9	17	21	78½	1
Wm. Brown, Sr., Gorrie, R.R. 1	do	17	8	8	18	21½	72½	1,15
Jas. A. Edgar, Wroxeter	do	15	13	8	16	20	72	1,15
TURNBERRY AGR. SOCIETY.								
Judge—D. McClure, Toronto.								
Wm. Webster, Lucknow, R.R. 2	Marquis	15½	23	8	19	21	86½	15
Chas. Carter, Wingham, R.R. 5	do	14½	23	7	18½	22	85	15
W. J. Currie, do R.R. 5	do	14	22	8	18	20½	82½	15,1,10
F. Stamper, Bluevale, R.R. 1	do	14½	20	8	18	19½	80	1,15
A. M. Fralick, Wingham, R.R. 1	do	14½	20	8	18	18½	79	1,15
Jno. J. Fryfogle, do R.R. 1	Goose	16	10	8	18	19½	71½	1,15

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

SPRING WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
MANITOULIN.		(20)	(25)	(10)	(20)	(25)	(100)	
GORE BAY AGR. SOCIETY.								
Judge—Henry Knight, Jr., Sault Ste. Marie.								
Geo. Strain, Gore Bay	Marquis	16	22	8	17	21	84	15
Arch. Campbell, Foxey	do	15½	21	8	18	21	83½	15
Samuel Ewing, Gore Bay	do	15	22	8	18	20	83	15
Harvey Beck, Foxey	do	14½	19	8	18	20½	80	15
H. Witty, do	do	15	16	9	19	20½	79½	15
J. E. Vanmeer, Gore Bay	do	14	17	8	19	20½	78½	15
Walter Smith, do	do	12	24	8	15	19	78	
MIDDLESEX.								
LONDON TP. AGR. SOCIETY.								
Judge—T. G. Brown, Ancaster.								
Jas. Smibert, Ettrick	Marquis	17½	24	8	17	20½	87	
Moir Bros., Ilderton	do	17½	21	8	17	21½	85	1,15
Donaldson Bros., Ettrick	do	16	23	8	17	19	83	15
L. G. McLary, London, R.R. 2	do	16	22	8	17	19½	82½	14,15
W. T. Whillans, Ilderton, R.R. 2	do	15½	18	8½	17	20	79	1,15,14
J. Armitt, Hyde Park	do	17	12½	8	17	21	75½	1,15
R. Dale, Ilderton	do	16½	13	9	17	19	74½	1,15
C. R. Carmichael, Ilderton, R.R.3	do	17	10	8½	16½	20½	72½	1
A. C. Ferguson, Komoka	do	14½	12½	8	16	20½	71½	1,15
NORTHUMBERLAND.								
BRIGHTON AGR. SOCIETY.								
Judge—W. Hickson, Bobcaygeon.								
Jas. MacAuley, Brighton	Carleton	16	22	8	18	20	84	15,14
M. L. Drinkwater, Colborne, R.R. 2	do	15½	21	8	18½	20½	83½	14,15
M. C. Taylor, Hilton	do	16	20	9	17	20	82	15,14,4
Wm. Gartshore, Brighton	Marquis	15	19	9	18	19	80	15
Jos. B. Wright, Orland	Carleton	15	19	8	18	19	79	15,14
H. Sanoa, Hilton	do	15	19	7	18	18	77	15,4
H. F. Lafferty, Trenton, R.R. 4	Marquis	16	15	9	15	21½	76½	15,2
W. I. Garbutt, Carrying Place	Carleton	15	10	8	19½	19	71½	4,10,15
ONTARIO.								
BEAVERTON AGR. SOCIETY.								
Judge—W. Hickson, Bobcaygeon								
J. Harrison, Beaverton	Marquis	17	15	8	18	22	80	1
M. Calder, do	do	16	18	8	17	17	76	15,14
Jno. Westlake, do	do	18	5	9	18	24	74	1,2
F. W. Rilance, do R.R. 2	do	17	5	9	19	23	73	1,15
Jos. McDonald, do	White Fife	14½	15	8	15	19	71½	4,2
Hodgkinson & Tisdale, Beaverton	Marquis	17½	0	9½	19½	24½	71	1,2,15
A. J. Barton, Beaverton, R.R. 2	do	17½	5	10	18	20	70½	1,15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS. *Con.*

SPRING WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
PETERBOROUGH.		(20)	(25)	(10)	(20)	(25)	(100)	
OTONABEE AGR. SOCIETY.								
Judge—E. H. Purdy, Port Perry.								
R. E. Drummond, Peterboro, R.R. 8	Marquis	16	18	8	18	24	84	
Chas. McIntyre, Peterboro, R.R. 8	do	15	20	10	15	20	80	10
W. A. Drummond, do R.R 8	French Imperial	16	15	8	20	21	78⅔	15, 14, 10
S. McIntyre, Keene, R.R. 2	Marquis	16	15	9	18	19	77	
Jno. E. Manley, Peterboro, R.R. 8	do	14	10	8	18	20	70	15
PETERBOROUGH IND. AGR. SOCIETY.								
Judge—Geo. McKague, Woodville, R.R. 4.								
J. D. Fowler, Peterboro, R.R. 4	Poor Man's Friend	18½	15	9½	18	23	82⅔	1, 15, 14
E. W. Wood & Son, do R.R. 6	Marquis	16	15½	9½	19	21	81	1, 10
R. A. Garbutt, do R.R. 4	do	17	15	9½	18	21	80½	1, 10, 15
R. J. Waller, do R.R. 3	do	16	16	9	18	21	80	1
I. P. Lillico, do	do	18	10	10	19	22½	79½	15, 1, 10
S. S. Blewett, do R.R. 1	do	16	14	9	18	21½	78½	1, 15, 11
A. B. Mann, do R.R. 4	do	17	12	10	17½	21½	78	10, 15, 1
Wm. White, do	do	17	11	9½	18	21½	77	10, 15, 1
PRESCOTT.								
ALFRED AGR. SOCIETY.								
Judge—Geo. R. Bradley, Kars.								
Alex. Charbonneau, Alfred	Marquis	18	23	8½	19	22½	91	15
J. A. Cadieux, do	do	17	22	8	19	22½	88½	4
Alex. Langevin, do	do	17	20	8½	19	21	85½	4
Jos. Robillard, do	White Fife	16½	21	8	17½	22	85	4, 12
D. Charbonneau, do	Red Fife	16½	21	8	18	20½	84	4, 12
Moise Leroux, Plantagenet	Black Sea	15½	20	8	18	21½	83	5, 4
A. Daoust, Alfred	White Fife	15½	20	8	18	21	82½	4, 12
E. Parisien, Alfred	Marquis	14½	20	8	18	20	80½	4, 12
Oscar Parisien, Alfred	White Fife	14½	20	7½	18	19½	79½	4
E. Dupont, Curran	do	15	19	7½	17	20	78½	4
E. St. Denis, Plantagenet	do	15½	18	8	16	20½	78	15
F. Provost, do	Red Fife	14	20	8	15	21	78	15
D. Parisien, Alfred	White Fife	14½	18	7½	18	19½	77½	4, 15, 12
F. Daoust, do	Red Fife	14½	17	8	17	20	76½	15
Samuel Parisien, Alfred	White Fife	13½	18	7½	18	19	76	4, 12, 15
A. Bissonette, do	do	14½	16	8	17½	19½	75½	
P. Boileau, do	do	13½	19	8	12	21	73½	4, 12
J. Brisebois, do	do	13½	15	8	16	20½	73	4, 15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

SPRING WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
RAINY RIVER.		(20)	(25)	(10)	(20)	(25)	(100)	
RAINY RIVER VALLEY.								
Judge—G. H. Farmer, Sault Ste. Marie, R.R. 2.								
Chris. McBride, Emo	Red Fife.........	18¾	23	8	17	23¾	90½	15
Chas. Fisher, do	Marquis.........	17	9	8	18	22½	74½	15, 2
RENFREW.								
COBDEN AGR. SOCIETY.								
Judge—Robt. McKay, Maxville.								
A. T. Graham, Cobden, R.R 3..	White Fife......	17	23	8½	18	20	86½	
J. G. McDiarmid, do R.R.....	Marquis.........	16	24½	6	18½	17½	82½	
Geo. McDiarmid, do R.R. 5..	do	14½	22	5½	18	13½	73½	10, 15
Samuel McMillan, do R.R. 6..	do	11½	24½	7	18	12	72	15
Lloyd McBride, do R.R. 3..	do	13	22	6	16	15	72	10
NORTH RENFREW SOCIETY.								
Judge—S. G. Gourlay, Kinburn.								
G. McClelland, Beachburg	Marquis.........	17½	24½	7	18	20	87	
A. M. Barr, do R.R. 1	do	16½	24	9	20	15½	85	
Jos. Keyes, Westmeath	White Fife......	14	22	8	16	18½	78½	15
Wm. McClellan, Cobden........	do	13½	22	7½	17	18	78	
Jno. W. Buchanan, Beachburg..	Marquis.........	14½	18	9	18	17½	77	4, 15
J. W. Brown, do ..	do	14½	19	7½	16	17	74	4
S. McClelland, do ..	do	14	17	8	16	17½	72½	15
Jno. Stevenson, do ..	do	12	22	8	17	13	72	
A. Munroe, do ..	White Fife......	13	23	6	15	13	70	
SIMCOE.								
COLDWATER AGR. SOCIETY.								
Judge—Alex. Morrison, Creemore.								
Jos. Taylor, Lovering	Marquis.........	18	23	9	18	22	90	15
J. J. Shiels, Waubaushene, R.R.1	do	16	22	8	18	22	86	15
Levi Taylor, Victoria Harbour..	Goose...........	16	21	8	18	22	85	15
A. A. Hawke, Coldwater, R.R. 3	Marquis.........	17½	19	8	17	22	83½	2
Chas. Spence, Lovering	....	16	20	8	17	21	82	15
Jos. Orton	Golden Chaff.....	16	17	8	18	21	80	1, 4
B. Durnford, Coldwater, R.R. 1	Marquis.........	14	17	7	18	19½	75½	2
TEMISKAMING.								
NEW LISKEARD AGR. SOCIETY.								
Judge—J. Byron Kaye, Bracebridge.								
Geo. Walsh, Liskeard	Marquis.........	16	20	9	19	20½	84½	13, 15
Jno. McFarlane, do	do	16	20	9	18	21	84	
D. Mackey, do	do	15½	20	9	18	19	81½	15

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

SPRING WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
TEMISKAMING.—*Con.*		(20)	(25)	(10)	(20)	(25)	(100)	
NEW LISKEARD AGR. SOCIETY. —*Continued.*								
Jno. N. Gray, Liskeard	Marquis	13½	17	8	18	18	74½	15
R. D. Chester, do	do	15	15	8	16	19	73	15
Geo. C. Foster, Uno Park	do	11	20	9	16	16	72	
Robt. Jellie, Liskeard	do	12½	18	9	16	16	71½	
Wm. McFarlane, do	do	13	20	8	11	19	71	15
WELLINGTON.								
ARTHUR AGR. SOCIETY.								
Judge—Jno. McDiarmid, Lucknow.								
H. Cormack, Arthur	Goose	15½	22	7½	18	21½	84½	
W. E. Carbin, do	do	16	20	7½	18	21	82½	
Peter Birns, do	do	15	21	7½	17	20½	81	2, 14, 15
Geo. W. Dodge, do	do	15	20	7½	17	21	80½	2, 15
E. Hay do	do	13½	19	7½	16	20	76	1, 2
Wm. Golding, do	do	14	14	7	16	19	70	1, 2, 15
CENTRE WELLINGTON AGR. SOCIETY.								
Judge—Thos. Hall, Brooklin.								
L. Sargent, Fergus	Marquis	18	21	8	18	23	88	15
Jas. L. Benham, Rockwood, R.R. 3	do	16	24	9	17	21	87	
A. Lindsay, Fergus	do	16	22	8	18	21	85	15
Wm. A. Atkinson, Fergus	do	14	23	9	18	20	84	15, 13
L. Armstrong, do R.R. 4	do	14	20	8	17	18½	77½	1
Jas. H. Anderson, Fergus, R.R. 4	do	17	17	5	18	20	77	1
Geo. Pritchard, do	do	17½	8	9	19	22½	76	15, 1, 11, 14
S. Meyer, Elora, R.R. 2	do	17½	13	8	16	21	75½	14
H. Skeoch, Fergus, R.R. 3	do	16	15	9	17	18	75	15, 10, 14
ROCKWOOD AGR. SOCIETY.								
Judge—J. A. McDiarmid, Collingwood, R.R. 2								
A. F. Auld, Guelph, R.R. 2	Marquis	13	22	8	17	17	77	14, 15
Neil McLean, Rockwood, R.R. 4	do	13	22	8	16	17	76	15
A. H. Shultis, do R.R. 2	do	13	23	7	15	16	74	
WEST WELLINGTON AGR. SOCIETY.								
Judge—Geo. E. Foster, Honeywood.								
A. H. Copeland, Harriston, R.R. 1	Marquis	17	12	8	19	22	78	15, 1
D. B. McEachern, Palmerston, R.R. 3	do	17	17	7	15	20	76	10, 1
R. Wilkin, Palmerston	do	17½	12	6	19	20	74½	1
F. Gordon, Harriston, R.R 3	do	18	12	8½	12	22	72½	1, 15
Jno. J. Noonan, do R.R. 1	do	17	10	6	18	20	71	1, 10
Wm. Gordon, do R.R. 2	do	16	8	8½	16½	21	70	1, 15

NOTE.—The figures in parenthesis at the top are maximum possible scores

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

SPRING WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	**Freedom from weeds.**	**Freedom from smut, blight and insects.**	**Freedom from other varieties and other kinds of grain.**	**†Yield and quality of grain.**	**Totals of scores.**	**‡Weeds in competitors' fields.**
YORK.		(20)	(25)	(10)	(20)	(25)	(100)	
MARKHAM AGR. SOCIETY.								
Judge—A. B. Rose, Echo Place.								
John Young, Milliken	Kitchener.......	18	24	8½	19	22½	90%	
W. G. Rennie, Agincourt.......	Marquis.........	18	23	7½	18½	22½	89½	14
Lowrie Bros., do	do	16½	21	8½	18	22½	86½	
McCowan Bros., Scarboro.......	do	16½	21	8½	19	21	86	14
J. B. Cooperthwaite, Agincourt, R.R. 1	do	17½	19	8	18	22½	85	
W. P. Johnstone, Stouffville....	Goose...........	17½	18	8	17	22	82½	
R. R. Johnstone, do	do	17½	18	8	16	22	81½	
Jno. Boyington, Gormley, R.R. 2	Goose...........	16	21	7	15½	21½	81	4
Jas. Torrance, Markham.......	Marquis.........	16	17	7½	18	22	80½	1
R. Frisby, Unionville, R.R. 1..	Goose...........	16½	15	8	18	22½	80	1
W. J. Bennett, Milliken	Marquis.........	18	19	5	18	19½	79½	1
J. B. Gould, Markham	Goose...........	16	15	8	16	22½	77½	14,1
RICHMOND HILL AGR. SOCIETY.								
Judge—A. B. Rose, Echo Place.								
Jno. Young & Sons, Milliken...	Marquis.........	17½	22	8	17½	22	87	10
F. A. Clark, Gormley, R.R. 2...	do	17½	20	7	18	21	83½	1,4
F. S. Rumble, Maple, R.R. 2...	do	16	20	9½	18	19	82½	1,14
Robt. Walkington, Maple, R.R. 2	do	16½	18	8½	16	22	81	1,10
Geo. Vanderburg, Richmond Hill	do	16	18	8	17	21	80	1,14
J. Brillinger, do	Goose...........	15	20	7	18	19	79	4
T. W. Legge, Temperanceville..	Marquis.........	14	20	8	16½	19½	78	14
T. E. Boynton, Gormley, R.R. 2	Goose...........	17	12	8½	18	22	77½	1
WOODBRIDGE AGR. SOCIETY.								
Judge—F. W. Rilance, Beaverton.								
Robt. Watson, Woodbridge.....	Marquis.........	15	24	8	19	23	89	
Geo. Troyer, do	do	15½	24	8	17	20½	85	
Wm. Lawrie, do	....	15	22	8	19	20	84	1
J. Fletcher, do	Marquis.........	14	18	8	18	21	79	
B. Waldrich, Maple	do	16	15	7	18	22	78	1
Geo. Farr, Weston	do	17	15	6	18	21	77	1
J Campbell, Woodbridge.......	do	16	8	8	18	21	71	1

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

BEANS.

Competitors in Order of Merit.	Name of variety	*General appearance.	Freedom from disease and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield and quality of grain.	Totals of scores.
KENT.		(20)	(10)	(20)	(15)	(29)	(100)
ORFORD AGR. SOCIETY.							
Judge—M. W. Sexsmith, Ridgeway.							
F. J. McLaren, Highgate, R.R. 1	Pea	19¾	10	20	15	29	93¾
Jno. Wade, do	do	19	10	20	15	29	93
H. F. Sifton, do	do	18¾	10	19	14	30	91¾
J. B. McDonald, Muirkirk, R.R. 2	do	18¼	9	19½	14½	29	90¼
Jno. McKay & Son, Highgate, R.R. 2	do	19½	9½	16	15	29½	89½
F. W. Scott & Son, Highgate, R.R. 2	Yellow Eye	18½	10	19½	14	29	89§
L. E. Manning, Highgate, R.R. 2	Pea	19¼	8¾	17	15	28¾	88¾
E. McDonald, Muirkirk, R.R. 2	do	17	9	20	14	28	88
W. M. Attridge, Highgate, R.R. 1	Yellow Eye	17½	9¼	20	14	29	87¾§
P. Clark & Son, do R.R. 2	Pea	16	9½	19	14	28	86½
Wm. Littlejohn, do R.R. 2	do	16	9½	19	14½	26½	85½
J. W. Reycraft, do R.R. 2	Yellow Eye	18½	9½	16	14	28½	84½§

*General appearance—Considering method of planting, uniformity of stand, vigor of growth and evenness of crop.

†Apparent yield and quality of grain—Considering number and size of pods per plant, number of beans per pod, uniformity of maturity, marketable quality, including size, smoothness and color.

§Points deducted for non-standard variety.

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

CLOVER.

Competitors in Order of Merit.	Apparent yield and quality of crops as indicated by:					Freedom from noxious weeds mentioned in Seed Control Act.	Freedom from other weeds, grasses, etc.	Favorable conditions for harvesting the crop, absence of loose stones, etc.	Totals of scores.
	Height of crop.	Closeness of plants.	Vigor and healthy appearance of plants.	Evenness of crop over field.	Number of well-filled heads per plant containing plump seed of good color.				
KENORA.	(15)	(15)	(5)	(10)	(15)	(25)	(10)	(5)	(100)
DRYDEN AGR. SOCIETY.									
Judge—J. McKay, Dryden.									
Jno. Hutchison, Dryden	14	13	4½	9½	14	25	8	4½	92½
A. J. Gardiner, Eagle River	14	14	5	9	13	25	8	4	92
D. F. McKenzie, do	14	14	5	9	11½	25	9	4	91½
T. H. Lewis, Oxdrift	14	14	4	9	12	25	9	4	91
Wm. Devoe, do	14	13	4	8	12	25	8	4	88
A. Spencer, Eagle River	14	14	3½	8½	12	24	7½	3	86½
S. Corner, Oxdrift	12	12	4	9	14	24	7	4	86
E. W. Wise, Dryden	12	11	4	7	14	25	7	3	83
C. Snider, Oxdrift	13	11½	4	7	13	22	7	4	81½
Jno. Adams, do	14	12	5	8	8	22	8	4	81
H. Skene, Dryden	12	12	4	9	12	20	7	4	80
A. E. Browning, Oxdrift	15	15	5	9	......	25	6	2	77
Wm. D. Neely, do	14	14	3	9	12	13	7	4	76
Jas. Hutchison, Dryden	12	11	4	7	13	19	6	3	75
W. H. Martin, do	12	12	3	7	12	19	6	3	74

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

PEAS.

Competitors in Order of Merit.	Name of variety	*General appearance.	Freedom from weeds.	Freedom from disease and insects as mildew, blight, weevil, worms, etc.	Purity of variety.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
BRUCE.		(20)	(15)	(20)	(15)	(30)	(100)	
EASTNOR AGR. SOCIETY.								
Judge—E. J. McLoughry, R.R. 4.								
F. Cameron, Lion's Head, R.R. 1	Can. Beauty......	17	12	17	12	24½	82½	14, 15
Wm. Bray, do R.R. 1	Golden Vine......	16½	12	16	12	25½	82	15
Jno. A. Dickie, do R.R. 2	do	17	12½	17	12	22½	81	15
A. Slocum, do R.R. 1	do	16	12	15	12	24½	79½	15
Wm. Warder, do R.R. 2	do	16½	10½	17½	13	21½	79	10, 15
S. L. Rutherford, do R.R. 1	do	16½	12	17	12	21	78½	15
A. Bray, do R.R. 1	do	15½	12	17	14	19½	78	15
A. Mielhausen, do R.R. 1	do	15	12	17	12	21½	77½	15
F. B. Hatt, do R.R. 2	do	14½	14½	12	12	24	77	15

*General appearance—Considering stand of crop, type of plant, vigor and uniformity of growth, and method of seeding.

†Yield and quality of grain—Considering number and size of pods per plant, uniformity of maturity and proportion of grain to straw.

‡See key page.

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
CARLETON.		(20)	(5)	(20)	(15)	(40)	(100)
CARP AGR. SOCIETY.							
Judge—J. H. Wiggins, Kemptville, R.R. 4.							
J. S. Caldwell, Carp	Golden Glow	16	4	17	14	36	87
Geo. Rivington & Son, Carp	Wisconsin No. 7	15	4	17	14	35	85
Geo. H. Caldwell, Carp	Imp. Leaming	15	4	16	14	34	83
C. G. Argue, do	Golden Glow	13	4	17	13	32	79
E. H. Graham, do	do	12	4	15	13	29	73
W. G. Rivington, do		13	......	15	12	32	72
J. H. Wilson, do	Golden Glow	13	3	13	12	30	71
C. P. Humphries, do		12	4	16	13	25	70
ELGIN.							
ALDBOROUGH AGR. SOCIETY.							
Judge—T. G. Brown, Ancaster.							
J. A. King & Son, Wardsville	W. Cap. Yel. Dent.	18	4½	19	14	37	92½
R. A. Kerr, Rodney	Wisconsin No. 7	17½	4½	19	14	36	91
D. Purcell & Son, Wardsville	W. C. Y. D.	18	4	19	13	36½	90½
Jas. Downie, do	Longfellow	17½	4½	18½	14½	35	90
W. W. Havens, Rodney	Wisconsin No. 7	17½	4	17½	14	35½	88½
Alf. Green, do	Longfellow	18	4	18½	14	33½	88
A. McColl, do	Wisconsin No. 7	17	4	16	14	36½	87½
E. J. Purcell, Wardsville	W. Cap. Yel. Dent.	16½	4	18½	14	34	87
A. J. Leitch, do	do do	16½	4	17	13½	35	86
A. Winger, do	do do	16½	4	17	13½	34	85
J. Hessenauer, Rodney	Compton's Early.	17	4	17	13½	34½	84§
W. J. Kelly, do	do do	16	4½	17	13½	35	84§
P. Wehlamn, do	Strawberry Dent.	16	4	18½	14	33	83½§
Jno. Bilton, Wardsville		17	4	17	11½	33½	83
A. Purcell, do	W. Cap. Yel. Dent.	14	4	16	14	33½	81½
J. Zoller, Rodney	Longfellow	15½	4	16	13	33	81½
Wm. Campbell & Sons, Wardsville	W. Cap. Yel. Dent.	15½	4	15	13	32	79½
Wm. Livingston, Wardsville	do do	13½	3½	14	12	29½	72½
WEST ELGIN AGR. SOCIETY.							
Judge—Thos. Creighton, Mooretown.							
W. S. Pearce, Wallacetown, R.R. 1	Longfellow	18	4	18	15	35	90
Jno. Lynch, do	White Cap	16	4	19	14	33½	86½
N. Crane, do	Longfellow	17	4	18	14	33	86

*General appearance—Considering uniformity and stand of crop, type of plant, and vigor of growth, and method of planting.

†Yield of fodder and grain—Considering quality and quantity of fodder, type as regards size, shape and yield of ears, size and depth of kernels, variety considered.

§Points deducted for non-standard variety.

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety	†Yield of fodder and grain.	Totals of scores.
ELGIN.—*Con.*		(20)	(5)	(20)	(15)	(40)	(100)
WEST ELGIN AGR. SOCIETY.—*Con.*							
J. A. Page, Wallacetown	Longfellow	15½	4	18	13½	33½	84½
J. Trothers & Sons, do	do	16	4	18	14	32¼	84¼
Jas. Page, do	Smut Nose	18	4	16	13	33	84
J. J. Sifton, do	White Flint	14	4	18	14½	33	83½
Wm. Page, do R.R. 1	E. rowed yellow	15¾	4	18	14½	31	83¼
R. Green, do R.R. 2	W. Cap. Dent	16½	4½	15	14	33	83
Jno. E. Pearce, do R.R. 2	Longfellow	16	4	19½	14	29	82½
S. L. Pearce, do	do	14½	4½	18	14	31	82
F. E. Smith, do	White Cap Dent	15½	4	18	14	29½	81
E. S. Backus, do	Yellow Dent	14½	4	17	14	31	80½
T. Garbutt, do	Longfellow	14	4	17½	13	31½	80
D. A. McAlpine, Iona, R.R. 3	White Cap Dent	15	4	17½	13	30	79½
H. Dromgole, Wallacetown	Red Blaze	15	3½	12¼	11	32½	74¼
Geo. Nott, Fingal, R.R. 1	Longfellow	14½	4½	18	14	23	74
ESSEX.							
AMHERSTBURG, ANDERDON AND MALDEN AGR. SOCIETY.							
Judge—C. C. Rokeby, Port Rowan.							
W. Sellars, Amherstburg, R.R. 2	Wisconsin No. 7	17	4½	18½	14½	35½	90
D. E. Bondy, North Malden, R.R. 1	do	16½	4	17½	15	36	89
Ed. Langlois	do	16½	3½	19	14	35½	88½
F. Deneau, North Malden, R.R. 1	do	16½	3½	18½	14	35½	88
C. Mickle, Amherstburg, R.R. 2	do	16	3½	18	14½	35	87
Wm. A. Bailey, do R.R. 2	do	16	4	18	13½	34½	86
F. Pettypiece, Auld	do	16	3½	18½	13	34½	85½
R. Langlois, Amherstburg, R.R. 1	do	15½	3½	19	14	33	85
W. C. Anderson, do R.R. 1	Bailey	16	4	17	14	34	85
Thos. Deslippe, do R.R. 1	W. Cap. Yel. Dent	16	4	18½	14	32	84½
Jno. Martin, do R.R. 2	Leaming	15½	3½	18	14	32½	83½
Wm. Thrasher, Auld, R.R. 1	do	15	3½	17½	14	32	82
S. Brush, Amherstburg, R.R. 2	Wisconsin No. 7	14	3½	16½	14	27½	75½
COMBER AGR. SOCIETY.							
Judge—Thos. Creighton, Mooretown.							
Wm. H. White, Staples	Leaming	17¼	4	20	14	36½	91¾
J. H. Dietrich, Comber	Wisconsin No. 7	17½	3	19½	14	36	90
Thos. White, do	Gold Medal	16¾	3½	20	14	35½	89¾
J. S. Ainslie, do	Leaming	16	4	20	14	35¼	89¼
V. Mailloux, do	Gold Medal	16	4	18	13½	37	88½
H. I. Smith, do	do	16	4	20	13¼	35	88¼
Arthur Taylor, do	Leaming	16½	3½	19	13½	35½	88
A. Dodson, Tilbury, R.R. 4	Wisconsin No. 7	16½	4	19	14	33	86½
Ben Brown, Comber, R.R. 1	Leaming	16½	4	20	13	32¾	86¼
R. B. Keith, Comber	Bailey	14¼	3½	20	13	33	84
W. J. Heck, Staples	Leaming	14½	3	18	13	34½	83
T. W. Taylor, Comber	White Cap Dent	13½	4	18	14	33	82½
J. J. Renaud, do	Yellow Dent	16	3	15	15	32	81

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
GLENGARRY.		(20)	(5)	(20)	(15)	(40)	(100)
ST. LAWRENCE VALLEY AGR. SOCIETY.							
Judge—J. H. Wiggins, Kemptville, R.R. 4.							
J. H. Goodfellow, Lancaster....	Ensilage.........	15	4	18	13	30	80
D. A. Ross, Martintown	do	16	4	16	12	31	79
Jas. Fife do	do	15	4	16	13	30	78
Wm. Ross, do	do	16	3	17	12	29	77
Jas. D. MacLennan, Lancaster..	do	14	4	15	13	30	76
A. McDonald, Summerstown ...	W.C. and Leaming	14	3	13	12	32	74
A. A. McLennan, Lancaster	Ensilage.........	13	3	13	12	29	70
GREY.							
MEAFORD AND ST. VINCENT AGR. SOCIETY.							
Judge—Robt. Berry, St. Mary's R.R. 1.							
W. A. Johnstone, Meaford......	Golden Glow.....	18	4½	20	10	36	88½
Jos. Hartman, do	Wisconsin No. 7..	17½	5	19½	10	34½	86½
E. Martin, Rocklyn, R.R. 2....	do ...	20	5	19	10	28½	82½
Jno. W. King, Meaford, R.R. 1..	do ...	15½	5	16½	10	29	76
Geo. Shields, Walter's Falls....	Golden Glow.....	16½	5	19½	10	24	75
H. Carnahan, Meaford	Wisconsin No. 7..	14½	5	17	10	25	71½
KENT.							
EAST KENT AGR. SOCIETY.							
Judge—R. H. Abraham, B.S.A., Chatham, R.R. 1.							
Sam'l. Holmes, Northwood, R.R 3	White Cap.......	18	3½	19½	15	37	93
D. Winters, do R.R. 3	do	18½	3½	19½	15	36	92½
P. Cameron, Thamesville.......	Yellow Dent......	19	4	18	14	33	88
P. Secord, do	White Cap.......	18½	3	19	14	32½	87
L. D. Hubbell, do	Wisconsin No. 7..	17½	3	19	14½	32½	86½
H. F. Hetherington, Thamesville	White Cap.......	17	3	19	14½	32½	86
Jas. Sherman, do	Yellow Dent......	17	3	18	14½	32½	85
Wilfred Smith, Northwood, R.R.1	White Cap.......	16½	3	18	14	33	84½
Jno. McDowell, Thamesville, R.R.5	Yellow Dent......	16½	3	18	14	32½	84
David Fish, Thamesville.......	do	16½	3	18	14	31½	83
Wm. McKenzie, do	White Cap.......	16	3	17½	14	31½	82
HARWICH AGR. SOCIETY.							
Judge, R. H. Abraham, Chatham, R.R. 1.							
J. D. McPherson, Blenheim, R.R.1	Delaware........	19	5	19¾	14	38¾	96½
Wm. Snow, do	White Cap.......	19	5	19	14	38	95
Wm. Knight, do R.R. 1	do	18½	5	19½	14	37	94
M. R. Pardo, do R.R. 3	Wisconsin No. 7..	18½	5	18½	14	37	93

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
KENT.—*Con.*		(20)	(5)	(20)	(15)	(40)	(100)
HARWICH AGR. SOCIETY.—*Con.*							
H. McCall, Blenheim	Dent	19	5	19	14	35	92
R. J. Wilson, Charing Cross	Wisconsin No. 7	19	5	19½	14	34	91½
T. Pegg, Blenheim	White Cap	19	5	10	14½	38½	87
Wm. R. Taylor, Mull	do	17	5	17	14	32	85
HARWICH AGR. SOCIETY.							
Judge—R. H. Abraham, Chatham, R.R. 1.							
A. S. Maynard, Chatham, R.R. 3	Flint	19	4½	19½	14¾	37¾	95½
R. J. Johnston, do R.R. 3	do	19	4½	19½	14	37	94
G. Clark, Blenheim	do	19	4½	18	14½	37	93
D. M. Campbell, Blenheim	do	17½	4½	18	14	36	90
W. W. Griffith, do	do	18	5	16	13	34	86
HOWARD AGR. SOCIETY.							
Judge—A. B. Rose, Echo Place.							
Clarence West, Northwood	Longfellow	17½	4	17	14	34½	87
J. S. Clark, Ridgetown	Eight-rowed	17	4	19	13	31	84
J. D. Brien, do	do	16	4	15	14	34	83
Chas. Scawm, do	do	16	3	16	14	32½	81½
N. C. Campbell, Ridgetown	do	15	3	16	14	29	77
P. B. Campbell, do R.R. 3	do	14½	4½	14	14	29	76
Geo. McDonald, Ridgetown		15½	3½	15	14½	27	75½
F. H. Clark, do	Eight-rowed	14½	4	14	14	28	74½
HOWARD AGR. SOCIETY.							
Judge—A. B. Rose, Echo Place.							
Jno. Miller, Thamesville, R.R. 4	White Cap Dent	18	4	16	14	36½	88½
Wm. Steen, Northwood, R.R. 3	do	17½	4	17	13½	36	88
H. Wright, do	do	17½	3½	18½	14	33½	87
F. Gosnell, Ridgetown	do	17½	4	16	14	34½	86
W. R. McDonald, Ridgetown	Little Huron	17½	4	17	13	32½	84
D. R. McDermid, Ridgetown, R.R. 3	Dent	16	4	18	14	31	83
H. George, Ridgetown	do	15	4½	19	14	29	81½
Jno. Mason, do R.R. 1	Wisconsin No. 7	16½	3½	19	14	28	81
Jno. Simpson, do	White Cap Dent	17½	4	16	14	29	80½
Jno. S. McDermid, Ridgetown	do	16	3½	19	14	28	80½
Willard Simpson, do	Dent	16½	3	18	14	28½	80
Thos. Gosnell, do	White Cap Dent	16½	4	12	12½	33½	78½
Reeder Bros., do	do	16	4	17	14	27	78
Geo. Simpson, Ridgetown, R.R. 1	Dent	17½	3	19½	14	24	78
W. Leatherdale, Thamesville, R.R. 4	White Cap Dent	16	4	16	13	28	77

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
KENT.—*Con.*		(20)	(5)	(20)	(15)	(40)	(100)
ORFORD AGR. SOCIETY.							
Judge—C. C. Rokeby, Port Rowan.							
R. A. Newman, Highgate, R.R. 2	W. Cap. Yel. Dent.	17½	3½	18½	14½	35½	89½
Jno. Snobelem, do R.R. 2	King Philip......	17	3½	17	14½	35½	87½
Jno. Wade, do R.R. 1	W. Cap. Yel. Dent.	16½	3½	19	14	34	87
Thos. Clark, do R.R. 2	Longfellow......	16½	3½	18	14	34½	86½
Louis Manning, do R.R. 2	W. Cap. Yel. Dent.	16½	3½	17	14½	34	85½
P. Clark & Sons, Highgate, R.R.2	Longfellow......	16	4	17½	13	34½	85
J. F. Stone, Highgate	Golden Glow.....	15½	4	18½	14½	32	84½
D. Ferguson, Highgate, R.R. 2..	Longfellow......	16	3½	17½	13	33	83
Jno. Schweitzer, do R.R. 1..	Wisconsin No. 7..	16½	3½	14	14	35	83
E. McDonald, Muirkirk, R.R. 1	W. Cap. Yel. Dent.	15	4	17½	14	32½	83
T. C. Gordon, Highgate, R.R. 2	do ...	16	4	17	12½	33	82½
A. Bergey, Bothwell, R.R. 3...	do ..	15	4	18	12½	32	81½
F. J. McLaren, Highgate, R.R. 1	Golden Glow.....	15½	4	17½	13	31	81
Nun Littlejohn, do R.R. 3	Sanford W. Flint.	16½	3½	18½	12	32½	81⅛
P. McAlpine, Thamesville, R.R. 3	W. Cap. Yel. Dent.	16	3½	16½	13½	31	80½
Wm. Gladstone, Highgate, R.R. 2	do	15½	3½	18½	11	31½	80
R. J. Newman, Muirkirk, R.R. 2	Leaming.........	16½	4	17	12	30	79½
Nelson Stone, Highgate, R.R. 1	do	15	2½	18	12½	31	79
W. M. Attridge, do	Golden Glow.....	15½	3½	17½	12	30	78½
Ed. Darch, Bothwell, R.R. 3....	W. C. Y. Dent...	14½	4	14	14	30	76½
A. Roberts, Muirkirk..........	Leaming.........	13½	3½	16½	12	30	75½
WALLACEBURG AGR. SOCIETY.							
Judge—M. W. Sexsmith, Ridgetown.							
D. L. McCreary, Wallaceburg...	Wisconsin No. 7..	18	3½	19½	15	36	92
Fred McCreary, do ...	Golden Glow.....	18	3½	19½	15	35	91
Chester Crowe, do ...	White Cap.......	17½	3	19	15	34½	89
H. Handsor, Electric..........	Yellow Dent.....	19	3	17	12½	37	88½
Jno. Coveny, do	do	17½	3	19½	14	34	88
D. Coveny, do R.R. 1....	White Cap.......	18	3	19½	14	33	87½
G. W. L. Mickle, Wallaceburg..	Yellow Dent......	17½	3	19½	14	33	87
H. Forbes, Tupperville	White Cap.......	17	3	19	14	33	86
O. Crowe, Wallaceburg	do	15	3	19	14	32	83
J. M. Langstaff, Tupperville	do	15	3	17	14	33½	82½
W. C. Gordon, Electric	Golden Glow.....	15	3	17	14	32½	81½
LAMBTON.							
BROOKE AND ALVINSTON AGR. SOCIETY.							
Judge—P. L. Fancher, Chatham.							
T. H. Lovell, Alvinston........	Wisconsin No. 7..	18¾	3½	20	14	33¼	89½
Thos. Braithwaite, Alvinston, R.R. 4	W. Cap. Yel. Dent	19	4	20	13½	31½	88
L. W. Oke, Alvinston, R.R. 2..	Golden Glow.....	18	3½	19	14	32	86½
Jas. McCallum, do R.R. 4..	W. Cap. Yel. Dent.	17	3½	18	12	33½	84

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
LAMBTON.—*Con.*		(20)	(5)	(20)	(15)	(40)	(100)
BROOKE AND ALVINSTON AGR. SOCIETY.—*Con.*							
Jas. Hand, Alvinston, R.R. 4..	Golden Glow.....	15	4	20	13	31½	83½
Geo. Lightfoot, do R.R. 2..	do	16	4¼	18	13	30	81¼
Ed. Reader, do R.R. 4..	do	15	3½	19	14	29	80½
H. A. Gilroy, do R.R. 6..	do	15½	4	16	14½	29½	79½
W. J. Weed, do R.R. 7..	do	15½	4	14	14	28	75½
D. Hayter, do R.R. 4..	do	13½	4½	18	14	23	73
FLORENCE AGR. SOCIETY.							
Judge—W. M. Abraham, Chatham.							
Chas. Bodkin, Thamesville, R.R. 2	Silver King......	17½	4	19½	14	36	91
B. Walker, Bothwell, R.R. 1....	White Cap.......	17	4	18	13	35½	87½
Wm. J. Davis, do	Golden Glow.....	17	4	17	13	34½	85½
Jas. Buchanan, Thamesville, R.R. 2	Silver King......	16	4	15	14	36	85
Gilbert Smith, Cairo, R.R. 1....	Early Rose.......	14½	4½	19	13	32	83
H. Buchanan, Thamesville, R.R. 2	Silver King......	15	4	16	14	33½	82½
D. Buchanan, do R.R. 2	Wisconsin No. 7..	15½	4	16	13	30	78½
W. F. McFadden, Florence, R.R. 3	do ...	15	4	19	12	27	77
Bert Harris, Thamesville, R.R. 2	Leaming.........	15	4	18	12	27	76
SOMBRA AGR. SOCIETY.							
Judge—P. L. Fancher, Chatham.							
Jno. McRae, Pt. Lambton......	W. Cap. Yel. Dent.	18	4	20	14	34½	90½
S. M. McDonald, do	Bailey...........	17½	4	19	13½	33½	87½
F. Burgua, Sombra, R.R. 3....	W. Cap. Yel. Dent.	18½	4½	18½	13	32½	87
Bert Payne, Pt. Lambton......	Wisconsin No. 7..	17½	4	19	14	31½	86
Jno. Johnston, do	W. Cap. Yel. Dent.	18	4	20	11½	30½	84
Wm. Stenton, do R.R. 2	do ...	17	4	18	11½	31	81½
H. Sheller, do	Wisconsin No. 7..	14½	4½	19	14	26	78
J. C. Reid, Wallaceburg, R.R. 5	do ...	15½	4	19	14	25	77½
S. S. Deyo, do R.R. 5	Bailey...........	13	4	17	14	28	76
J. C. McMillan, Pt. Lambton....	Wisconsin No. 7..	14	4½	15	14	25	72½
LEEDS.							
BROCKVILLE AGR. SOCIETY.							
Judge—Robt. McKay, Maxville.							
A. C. Hardy, Brockville........	Wisconsin No. 7..	16½	4½	18	14½	32	85½
Jos. Hudson & Son, Lyn........	W. Cap. Yel. Dent.	17	4	15½	14½	31½	82½
E. H. Easton, do	G. G. & W. Cap....	18	4	16	10	34	82
Wyatt Walker, Bellamy's, R.R. 1	Wisconsin No. 7..	16½	4½	17	13½	29½	81
V. W. Brown, Lyn.............	W. Cap. Yel. Dent.	17	4½	14	14	30½	80
W. H. McNish, Lyn	W. C. & N. Dakota	17	4	18	7½	32½	79
J. S. Moore, Bellamy's, R.R. 1..	Wisconsin No. 7..	16	5	15	14	28½	78
H. Hendrick, Bellamy's	Barns Sweet.....	15	.5	18½	14	21½	72
Dr. Clark, Brockville	W. Cap. Yel. Dent.	15½	5	16	14	21	71½
J. Gilroy, Tincap	Imp. Mastodon and Dent......	16½	4	14	7½	29½	70½

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
LINCOLN.		(20)	(5)	(20)	(15)	(40)	(100)
NIAGARA TOWN AND TP. AGR. SOCIETY.							
Judge—Wm. Hickson, Bobcaygeon.							
R. G. Dawson, Niagara-on-the-Lake	Lake Dakota	17½	4	19	15	36½	92
Jno. D. Cooper, Niagara-on-the Lake	Eight-rowed Yel.	17	5	16	15	35½	88½
Jno. Stewart, Niagara-on-the-Lake	Dakota	17	4½	18	15	33¾	88¼
C. S. Knox, Niagara-on-the-Lake	do	16½	5	18	15	33½	88
J. R. Murray, do	do	17½	4	16	15	35	87½
Thos. Hiscott, do	Longfellow	16¼	5	16	15	33	85¼
A. Muir, do	do	17½	4½	17	15	31	85
Jas. Lavell, do	Eight-rowed Yel.	16½	4¾	14	15	33	83¼
C. H. Buftan, do	Longfellow	18	4	19	15	27	83
W. M. Bissell, do	Dakota	16	4	16	15	30½	81½
Jas. Hope, do	Longfellow	15	5	14	15	27	74
NORFOLK.							
COURTLAND AGR. SOCIETY.							
Judge—E. J. Mullins, Woodslee.							
J. F. Robinson, Courtland	White Cap	20	4	20	13½	34	91½
G. A. Ronson, do	Golden Glow	20	4	17	15	35	91
C. W. Graydon, Delhi, R.R. 3	White Cap	19	4	20	14	33	90
H. Fisher, Courtland, R.R. 2	do	19	4	17	14	35	89
G. B. Ryan, Tillsonburg, R.R. 4	Wisconsin No. 7	19	4	19	14	32½	88½
J. R. Simmons, Courtland	Golden Glow	17	4	20	14	33	88
C. C. Kohl, Delhi, R.R. 3	do	18	4	20	14	31	87
W. E. Sandham, Tillsonburg, R.R. 4	do	18	3	20	14	29	84
J. C. Byerlay, Courtland, R.R. 2	White Cap	17	3	16	13	34	83
R. G. Herron, Delhi, R.R. 3	do	19	4	19	12	27	81
C. Birdsall, Courtland, R.R. 1	do	16	3½	16	14	30½	80
V. McDonald, Tillsonburg, R.R. 1	do	17	2	18	12	28½	77½
W. Helsdon, Courtland	do	17	3	17	12	29	75
A. Cowan, do	Wisconsin No. 7	15	4	15	12	29	75
L. Herron, do R.R. 2	Golden Glow	15	4	17	13	25	74
F. Chipps, Delhi, R.R. 3	White Cap	15	3	15	11	29	73
A. T. Twiss, Courtland	Flint	16	4	15	8	31	72½
Jas. Heldson, Tillsonburg, R.R.4	White Cap	14	4	16	12	26	72
T. B. Ronson, Courtland, R.R. 2	Golden Glow	14	4	15	11	26	70
NORFOLK AGR. SOCIETY.							
Judge—E. J. Mullins, Woodslee.							
L. Forest, Nixon, R.R. 1	Golden Glow	20	4½	19	14	37½	95
W. C. Everett, Simcoe	Excelsior's N. Dakota	20	5	20	14	34	91½
W. A. Butler, Delhi, R.R. 2	White Cap Dent	18	4	19	13	36	90

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
NORFOLK.—*Continued.*		(20)	(5)	(20)	(15)	(40)	(100)
NORFOLK AGR. SOCIETY.—*Con.*							
A. McKnight, Simcoe, R.R. 2..	Yellow Smutnose.	20	4	18	14	34	88⅔
L. A. Everett, do R.R. 2..	Golden Glow.....	19	4	17	11	36	87
P. Potts, do R.R. 2..	do	19	3	16	12	36	86
Benson Hall, do R.R. 2..	White Flint......	19	5	17	13	33	85⅔
Jas. Hunter, Lynedoch	Yellow Smutnose..	16	4½	18	13	30½	80⅔
E. E. Murphy, Silver Hill.......	Golden Glow.....	16½	4	17	14	28	79½
Thos. Leedham, St. Williams, R.R. 1	do	16	3	17	12	31	79
Wm. Mason, Simcoe, R.R. 4....	White Cap Dent..	15	3	16	14	30	78
Fred Beaupre, do R.R. 2..	Golden Glow.....	14	3	16	11	32	76
NORTH WALSINGHAM AGR. SOCIETY.							
Judge—Cecil Schuyler, Woodstock.							
W. H. Hunter, Langton, R.R. 1..	White Cap Dent..	17¾	3	19	14	36	89¾
W. S. Collings, do R.R. 1..	do ...	16¼	4½	19	14	35½	89¼
G. B. Robinson, do R.R. 1..	do ...	15¾	4	19	14½	34	87¼
E. Hutchinson, do R.R. 1..	Flint............	16	3½	18	14	34	85½
C. Hetherington, do R.R. 2..	do	15	4	17	14	34	84
Uriah Hill, do R.R. 1..	Longfellow......	16¼	4½	18	14	31	83¾
Henry Rice, do R.R. 2..	Leaming.........	14¾	3	17	14	34	82¾
Wm. Hill, do R.R. 1..	Longfellow......	15	4	18	14	30	81
A. Cowan & Son, do R.R. 1..	White Cap Dent..	15¼	3	18	13	31	80¼
Wm. Wittel, do R.R. 2..	Flint............	14	4½	15	14	32	79½
Wm. Sinden, do R.R. 1..	Bailey..........	13	4	14	13	28	72
NORTHUMBERLAND.							
SEYMOUR AGR. SOCIETY.							
Judge—J. N. McGill, Millbrook.							
H. McKelvie, Campbellford, R.R. 4	White Cap.......	17½	5	17	14	34½	88
R. McKelvie, do R.R. 5	do	15	5	17½	14½	34½	86
Geo. Nelson. do R.R. 4	do	16½	4½	17½	14	32	84½
Thos. Dunham, do R.R. 4	Leaming.........	15½	4½	17	14½	34½	84⅔
W. W. Whitton, do R.R. 5	White Cap.......	15	4½	17	14	33	83½
Alex. Hume, do R.R. 3	do	15½	4½	12	14	33	79
Wm. Rannie, do R.R. 5	Wisconsin No. 7..	14	4½	15	13	31½	78
M. West, do R.R. 4	White Cap.......	15½	4	15	14	29	77½
Jas. L. Forestell do R.R. 1	Wisconsin No. 7..	12½	5	15½	14	30	77
Chas. E. Bonnycastle, Campbellford, R.R. 3	White Cap.......	12½	4½	15	13	30	75
Wm. Locke, Campbellford R.R. 3	do	12½	4½	16	13½	27	73½
Wm. M. Stephens, do R.R. 3	do	13	4½	15	14	26	72½

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
ONTARIO.		(20)	(5)	(20)	(15)	(40)	(100)
BEAVERTON AGR. SOCIETY.							
Judge—J. A. McGill, Millbrook.							
Jno. Westlake, Beaverton, R.R. 3	Wisconsin No. 7..	18	5	18½	14½	35½	91½
John Ross, do	do ...	17½	5	18	14	36	90½
F. W. Rilance, do R.R. 2	Golden Glow.....	16½	5	18	14½	35½	89½
Robt. Ross, do R.R. 1	Wisconsin No. 7..	17	5	18	14	35	89
Jno. Alsop, do R.R. 2	Golden Glow.....	15	4½	17½	14	35	86
D. Doucette, Brechin, R.R. 1...	Wisconsin No. 7..	14½	4½	18	14	34	85
D. Gilchrist, do R.R. 1...	W. C. Y. Dent....	15½	4½	17	14	33	84
J. Harrison, Beaverton, R.R. 2..	Golden Glow.....	14	4½	17	14½	33½	83½
McMillan Bros., do R.R. 1..	do	15	4½	18	13½	31½	82½
Joe McDonald, do R.R. 2..	Longfellow......	13	4	17	14	31½	79½
Dunrobin Farms, do R.R. 1..	Wisconsin No. 7..	13½	4	16	14	31½	79
Geo. Wills, do R.R. 2..	Compton's Early.	15	4	17	12	32½	78½
A. Veale, do R.R. 1..	Wisconsin No. 7..	13	4	17	14	30	78
OXFORD.							
EAST NISSOURI AGR. SOCIETY.							
Judge—W. M. Abraham. Chatham, R.R. 1.							
Geo. Matheson, Harrington West	Golden Glow.....	16½	4	19¾	12½	35½	88¼
Hugh Rutledge, Kintore West..	Bailey...........	17	4	19½	14	33½	88
A. Whetstone, Lakeside........	Golden Glow.....	16½	4	19½	12½	35	87½
D. Thompson, Thamesford......	Yellow Dent......	16½	4	19	12	33½	85
J. A. Calder, Lakeside.........	White Cap.......	16½	4	19	12½	32	84
Bert Thornton, Thamesford, R.R. 2	White Flint......	17	4	18½	8	35½	83
D. Quinn, do	White Cap.......	16	4	19	8½	32½	80
Mercer Bros., do	Yellow Dent......	16½	4½	19½	10	26½	77
Geo. A. Sutherland, Lakeside...	Mixed...........	16½	4	15	8	33	76½
Jno. C. Henderson, Lakeside....	Yellow Dent.....	15	......	19	10	30	74
W. C. Henderson, Thamesford..	do	13½	4	19¾	10	25	72¼
F. G. Seaton, Lakeside.........	Silver King......	14	4½	10	13	30	71½
SOUTH NORWICH AGR. SOCIETY.							
Judge—Cecil Schuyler. Woodstock.							
John Beck, Otterville, R.R. 2..	Wisconsin No. 7..	18¾	3	19½	12	37	90¼
Wm. Innis, do R.R. 1..	do ..	18¾	4	18½	14	32½	87¾
Jas. Johnston, do R.R. 1..	do ..	16½	4	19	14	34	87½
Alex. Moore, La Salette, R.R. 2	Ensilage.........	18¾	4½	19½	10	34½	87¼
H. Treffry, Otterville, R.R. 2...	Wisconsin No. 7..	17½	4½	17	14½	32½	86
A. Snyder, do R.R. 2...	do ..	17¾	4	17	14	32½	85¼
Wm. Treffry, do R.R. 2...	do ...	17¼	4	13	14½	35¼	84
A. A. Graham, do R.R. 2...	do ...	16½	4¾	18	14	30½	83¾
Jno. Rider, do R.R. 1...	do ...	14¾	4½	18	14	32¼	83½
Geo. Singer, Tillsonburg, R.R. 1	do ...	17	4½	18½	14½	28½	83

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
OXFORD—*Continued.*		(20)	(5)	(20)	(15)	(40)	(100)
SOUTH NORWICH AGR. SOCIETY.—*Continued.*							
Eli Barnim, Otterville, R.R. 1..	Wisconsin No. 7..	16	4	18	13	31½	82½
Chas. Longstreet, La Salette....	do ...	16½	4½	19	14½	25	79½
Geo. Parson, Otterville	do ...	14½	4¼	19	14	23	74¾
R. Payne, Tillsonburg, R.R. 2..	White Cap.......	14¼	4¼	17	14	23	72¾
A. Hanson, Otterville, R.R. 2..	Wisconsin No. 7..	14	4¾	9	14½	30	72¼
E. Owens, Tillsonburg, R.R. 2..	do ..	13	4½	18	14	21	70½
Jas. Parker, Otterville, R.R. 2..	Golden Glow.....	12¾	3	16	8	30½	70¼
C. Hussey, do R.R. 2..	Wisconsin No. 7..	13½	5	17	14	20½	70
PEEL.							
TORONTO TP. AGR. SOCIETY.							
Judge—R. J. Wilson, Charing Cross.							
Samuel Switzer, Streetsville...	Ensilage.........	16½	4½	19	14	31	85
W. J. Drinkwater, do ...	do	16½	4½	15	14½	33½	84
Jas. B. Ross, Meadowville......	do	15½	5	17½	12	30½	80½
J. D. Steen, do	do	16	4½	15	14	30	79½
S. L. Hall, Streetsville, R.R. 2..	do	15¼	4¾	16	13	28½	77½
J. E. Weylie, do R.R. 3..	do	15	4½	14	14½	28¾	76¾
R. Kay, Erindale	do	15	5	17	14	25	76
PERTH.							
FULLARTON, LOGAN AND HIBBERT AGR. SOCIETY.							
Judge—S. M. Pearce, Fingal, R.R. 1.							
A. Krauskopf, Dublin	Bailey...........	17½	5	16	14	31	83½
Wm. Forrester, Mitchell........	do	18	5	15	15	30	83
A. Hodgson, do	Leaming.........	18	5	19	13	27	82
Geo. Krauskopf, Dublin	Bailey...........	16½	5	19½	14	26	81
A. Cole, Mitchell, R.R. 1.......	Golden Glow.....	17	5	19	13	26	80
Jas. Scott, Cromarty...........	Bailey...........	17	5	15	14	28½	79½
D. Campbell, Mitchell, R.R. 1..	do	17	5	15	14	28	79
H. R. Greenwood, do R.R. 1..	Wisconsin No. 7..	15½	4½	17	15	26	78
Jno. Elliott, do R.R. 3..	Bailey...........	16½	5	15	14	27	77½
H. McPhail, do R.R. 1..	do	17	4½	14	13	28½	77
Geo. Hillebrecht, Bornholm, R.R. 1	Wisconsin No. 7..	14	5	15	15	22	71
STRATFORD AGR. SOCIETY.							
Judge—S. M. Pearce, Fingal, R.R. 1.							
Wm. H. Douglas, St. Paul's, R.R. 2	W. Cap. Yel. Dent.	18½	4½	20	10	34	87
Frank Bell, do R.R. 2	Wisconsin No. 7..	18	4½	19½	10	32	84
Robt. Thompson, do R.R. 2	W. Cap. Yel. Dent	17½	4½	20	10	31½	83½
Arbogast Bros., Sebringville....	do ..	17½	5	19	10	31½	83

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
PERTH.—*Continued.*		(20)	(5)	(20)	(15)	(40)	(100)
STRATFORD AGR. SOCIETY.—*Con.*							
W. W. Ballantyne, Stratford, R.R. 3	**W. Cap Yel. Dent.**	19	5	15	11	31½	81½
D. M. Ballantyne, do	Wisconsin No. 7..	17½	5	16	10	26½	75
E. Dunsmore, do	Golden Glow.....	17	5	17	10	25	74
J. Litt, Sebringville............	Bailey...........	16	5	18	10	24	73
John Fraser, Stratford	do	16½	5	15	10	24	70½
PRINCE EDWARD.							
AMELIASBURG AGR. SOCIETY.							
Judge—Robt. McKay, Maxville.							
T. D. Wallbridge, Rossmore....	Wisconsin No. 7..	16	4½	18	14½	32	85
W. J. Barber, do	W. Cap. Yel. Dent.	16	4	18	14	29½	81½
Jas. Wallbridge, do	do ..	15	4½	17½	13½	30½	81
Thos. Nightingale, do	do ..	15	4½	15	14½	29	78
Jas. R. Anderson & Son, Mountain View	Wisconsin No. 7..	13½	4½	19½	14	25½	77
Harry Jose, Rossmore.........	do ...	15½	4½	11	14	30	75
L. Wallbridge, do	Wisconsin No. 7 & W. Cap Dent.	14½	4½	17	10	28½	74½
H. B. Wallbridge, Rossmore, R.R. 1	Pride of Nashua..	15½	4½	12½	13½	29½	73½
D. W. Valleau, do	W. Cap Yel. Dent.	15	4½	14½	14½	25	73½
WATERLOO.							
SOUTH WATERLOO AGR. SOCIETY.							
Judge—R. J. Wilson, Charing Cross.							
Jas. R. Wood, Preston, R.R. 2..	Wisconsin No. 7..	18	4¾	19	14½	34½	90¾
M. B. Snyder, Ayr, R.R. 1	Ensilage..........	19	4¾	19½	12	33¾	89
Wm. Gillespie, Galt, R.R. 5....	Wisconsin No. 7..	16¾	4¾	18½	14	34½	88½
A. G. Taylor, do R.R. 7....	do ...	17½	5	19	14	32	87½
W. C. Sutherland, do R.R. 7...	Leaming..........	16½	4½	19	14	33	87
Geo. R. Barrie, do R.R. 7...	Wisconsin No. 7..	16	4½	17½	14	32½	84½
E. J. Kemkes, Branchton, R.R. 1	do ...	15¾	4¾	18	14	30½	83
A. S. Clemens, Hespeler.......	Ensilage..........	16¼	4½	17½	12	32½	82¾
Robt. E. Cowan, Galt, R.R. 3...	Wisconsin No. 7..	16	4¾	17¾	15	29	82½
Miss K. L. Wilks, Blair........	do ...	16½	4½	14½	14	32½	82
J. W. Studiman, Branchton R.R. 1	**W. C. Y. Dent....**	13	4¾	18	14	27½	77¼
T. M. Jamieson, Hespeler, R.R. 1	Wisconsin No. 7..	13¾	4¾	17¾	13¾	27	77
Wm. C. Shaw, do R.R 2	do ...	13	4¾	17¾	14	26	75½
WELLAND.							
BERTIE AGR. SOCIETY.							
***Judge*—W. Hickson, Bobcaygeon**							
Geo. W. Miller, Streetsville, R.R. 2	Wisconsin No. 7..	19	5	19	15	35	93
Wm. Woehl, Bridgeburg, R.R. 1	Golden Glow.....	17	5	19	15	35	91
R. Sexsmith, Ridgeway, ...	W. Cap Yel. Dent.	17	5	19	15	33½	89½
J. W. Jewson, Fort Erie, R.R...	Coatsworth......	15½	5	19	15	31½	86

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
WELLAND—*Continued.*		(20)	(5)	(20)	(15)	(40)	(100)
BERTIE AGR. SOCIETY.—*Con.*							
J. M. McGaw, Fort Erie, ...	W. Cap Yel. Dent.	16	5	17	15	31½	84½
D. L. Hershey, do R.R. 1	do ..	16½	4½	17	15	31	84
H. J. Miller, Bridgeburg	Golden Glow.....	16½	5	15	15	31	82½
Jno. S. Miller, Stevensville, R.R.	do	16½	5	16	14	29	80½
A. W. Athoe, Ridgeway, R.R. 2.	W. Cap Yel. Dent.	14	5	18	15	23	75
Maj. Jas. E. Laur, Bridgeburg..	Early Butler....	15½	5	19	15	20	74½
Geo. Sexsmith & Son, Ridgeway, R.R. 2	Dent............	15	5	17	15	21	73
W. W. Bowen, Ridgeway	W. Cap Yel. Dent.	12½	5	18	15	20	70½
W. J. Wale, Bridgeburg	Compton's Early.	14	5	14	15	22	70
J. Lejune, Fort Erie...........	Russian Yel. Dent	14	5	16	15	20	70
YORK.							
WOODBRIDGE AGR. SOCIETY.							
Judge—A. J. Thomson, Toronto.							
I. Fletcher, Woodbridge, R.R. 1	Leaming.........	17	4	18	14	37½	90½
Wm. Lawrie, do R.R. 2	Wisconsin No. 7..	17	4½	15	13	36½	86
Jas. Bell, do R.R. 3	Compton's Early	15	4½	16	14	36	85½
A. Bagg, Edgeley..............	Wisconsin No. 7..	16½	4	15	14	33½	83
T. G. Hutchison, Woodbridge, R.R. 2	do ...	16	4	15	12	31½	78½
A. J. Witherspoon, Woodbridge, R.R. 1	do ...	15½	4	15	12	30	76½
Geo. Watson, King, R.R. 1......	Golden Glow.....	15½	3½	11	13	31	74
J. S. Watson, Woodbridge, R.R. 2	Wisconsin No. 7..	14	4	14	12	29	73

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
ALGOMA.		(15)	(17)	(20)	(10)	(38)	(100)
BRUCE MINES AGR. SOCIETY.							
Judge—Jno. C. Duff, Tara.							
J. C. Wilson, Bruce Mines, R.R. 1	Carman.........	11	16	17	10	29	83
H. Skusky, do R.R. 3	Green Mountain..	11	15	17	10	26	79
N. S. Pace, do	Carman.........	8	15	18	10	25	76
Jno. Shaule, do	Green Mountain..	7	16	15	10	27	75
S. Rowe, do R.R. 1	Irish Cobbler.....	8	15	17	9	24	73
Fred Hopper, do	Beauty of Hebron	8	15	16	9	24	70§
CENTRAL ALGOMA AGR. SOCIETY.							
Judge—Arch. Greer, Mansfield, R.R. 1.							
W. N. McAuley, Goulais Bay...	Green Mountain..	12½	14	20	10	26¼	82¾
Chas. A. Somes, do ...	do ...	11½	13	18	10	26½	79
H. Knight, Sault Ste. Marie, R.R. 1	do ...	12	14	18	10	23½	77½
W. J. Conway, do	do ...	12	13	19	10	23¼	77¼
G. H. Farmer, do	do ...	12½	15	20	10	19¼	76¾
Thos. Avery, do	do ..	12½	13	19	10	22	76½
J. W. McAuley, Goulais Bay....	Carman No. 3....	11	14	15	10	25¾	75¾
C. W. Eggsfield, Sault Ste. Marie	Green Mountain..	11	14	15	10	21½	71½
NORTH SHORE AGR. SOCIETY.							
Judge—Arch. Greer, Mansfield, R.R. 1.							
Wm. Barkley, Bar River.......	Carman No. 1....	13½	17	19	9	29¾	88¼
J. A. Davidson, MacLennan	Green Mountain..	14	17	19	10	26¾	86¾
L. Larocque, Laird	do ...	12	17	19	10	28	86
Ed. Pollard, Echo Bay........	Carman.........	13	15	18	9	29½	84½
D. Headrick, do	Irish Cobbler.....	11	13	16	9	31¼	80¼
W. R. Majury, do	Russett..........	11	15	16	10	28⅛	80⅛
G. A. Hurley, do	Carman No. 1....	11	14	13	10	26⅞	74⅞
ST. JOSEPH ISLAND AGR. SOCIETY.							
Judge—Arch. Greer, Mansfield, R.R. 1.							
Thos. White, Richard's Landing	Davies Warrior..	13½	15	20	9	31¾	89¼
Chas. Young, do	Irish Cobbler.....	12½	14	18	9	28¼	81¾
Jno. Cheer, do	Green Mountain..	11½	16	16	8	28½	80
Wm. Canfield, do	Empire State.....	13	15	17	10	24¾	79¾
R. R. Rains, do	Early King......	11½	14½	16	10	24¾	76¾
W. R. Lay, do	Green Mountain..	12	14	17	9½	23¾	76¼
Geo. Smedley, do	do ..	12	15	17	9	23	76
Victor Rains, do	Early King......	10½	14	14	9	26½	74

*General appearance—Considering method of planting, stand of crop, and vigor of growth.

†Apparent yield—Considering weight of marketable potatoes, per square yard, quality, smoothness and uniformity of shape, state and uniformity of maturity, and freedom from sunburn.

§Points deducted for non-standard variety.

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
ALGOMA—*Continued.*		(15)	(17)	(20)	(10)	(38)	(100)
ST. JOSEPH ISLAND AGR. SOCIETY.—*Continued.*							
John Fife, Richard's Landing	Carman	11½	13	16	9	24	73½
Wm. Lee, do	Carman No. 1	11½	13	15	8½	24¾	72¾
Mrs. A. W. Ross, do	Irish Cobbler	11½	13	16	8	23¼	71¾
R. Cheer, do	Green Mountain	12	14	15	9	20¾	70¾
H. Matheson, do	do	11	13	16	9	21¾	70¾
THESSALON AGR. SOCIETY.							
Judge—J. C. Duff, Tara.							
Jno. McDougall, Sowerby	Beauty of Hebron	14½	16½	19½	10	37	95½§
Alex. J. Bell, do	Green Mountain	12½	16	19	10	34	91½
I. Leach, Thessalon, R.R. 2	Beauty of Hebron	12	16	19	10	33	88§
A. I. Hopkins, do R.R. 2	Green Mountain	12	14	19	10	31	86
Jos. Walker, do R.R. 2	Beauty of Hebron	12	15	19	10	31	85§
D. McLennan, Livingstone Creek	Davies Warrior	11	14	18	10	30	83
Wm. Weir, Thessalon, R.R. 2	Green Mountain	10½	14	17	10	29	80½
Jno. R. McLennan, Thessalon R.R. 2		10½	14	15	10	29	78½
H. Hagen, Thessalon	Beauty of Hebron	10	14	16	10	27	75§
Jas. Mills, Bruce Mines	Carman	10	14	16	9	27	76
Thos. Cordukes, Thessalon, R.R.2	Beauty of Hebron	10	14	16	9	27	74§
Wm. Mitchell, BruceMines,R.R.1	Carman No. 1	10	14	16	9	24	73
Proud Bros., Bruce Mines	do	9½	14	15	8	25½	72
M. Hopper, Thessalon, R.R. 1	do	9	14	15	8	24½	70½
BRUCE.							
HEPWORTH AGR. SOCIETY.							
Judge—Jas. McLean, Richmond Hill.							
C. A. Millard, Hepworth	Empire State	13	15½	19	10	27½	83§
Thos. Hills, do	do	13	16	18½	10	26½	82§
Jas. Doubt, do	do	12½	16	17½	10	26½	80½§
Chas. Walker, do	do	12½	16	17½	10	26	80§
Samuel Doubt, do	do	13	15½	17	10	26	79½§
Chas. Eldridge, do	do	10½	16	18	10	26½	79§
Chas. Yates, do	do	13	15	18	10	24½	78½§
Robt. Yates, do	do	12	16	19	8½	23½	77§
E. H. Clifford, do	Am. Wonder	12	16	16½	9	24	75½§
W. Teeple, do	Empire State	12	16	18	6½	24½	75§
NORTH BRUCE AND SAUGEEN AGR. SOCIETY.							
Judge—Jas. McLean, Richmond Hill.							
Jno. Baker, Port Elgin	Red Elephant	13½	15	19	9½	28	83§
D. E. Campbell, do	Empire State	12	15½	19	7½	30½	82½§
W. J. Pierson, do R.R. 2	do	13	15½	18½	10	27	82§
Wm. Greathead, Southampton	do	13½	15	18½	9	25½	79½§

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
BRUCE—*Continued.*		(15)	(17)	(20)	(10)	(38)	(100)
NORTH BRUCE AND SAUGEEN AGR. SOCIETY.—*Con.*							
A. Uphall, Port Elgin	Sir W. Raleigh	11	14½	17½	10	27½	78½§
Ed. Leeder, do	Empire State	12	15	16	9½	27½	78§
Chas. McEvers, do	Rose of the North	11	14½	16½	10	27½	77½§
Samuel Sparks, do	Red Elephant	11	14	15½	9½	23	71§
WIARTON AGR. SOCIETY.							
Judge—Jas. McLean, Richmond Hill.							
H. F. Loney, Wiarton, R.R. 2	Am. Wonder	13½	16	18½	10	30	86§
T. H. Rathwell, do	Empire State	13	15½	19	10	26½	82§
Theo. Dance, do	Little Wonder	11½	15	19	10	24½	78§
B. H. Beacock, do	Empire State	11½	16	17½	10	24	77§
Geo. Loney, Oxenden	do	11	16	17½	10	24	76½§
F. N. Stephens, Wiarton, R.R. 2	Am. Wonder	11	15½	19	9½	23	76§
Wm. Lembke, do R.R. 2	Green Mountain	12	15½	18	7	23	75½
Chas. W. Loney, do	Empire State	10	15	18	10	24	75§
F. Buckland, do R.R. 2	Am. Wonder	11	14	19	10	22½	74½§
CARLETON.							
METCALFE AGR. SOCIETY.							
Judge—Robt. McKay, Maxville.							
J. D. Wallace, Edwards	Green Mountain	12	16	17½	8½	23½	77½
R. N. & J. E. Woods, Metcalfe	Davies Warrior	12	15½	16½	8½	24½	77
H. A. Woods, do	Freemans	11½	15	19½	8½	21½	74§
Robt. McEwen, Edwards	do	12	13½	16½	9	22½	71½§
W. Ralph, do R.R. 1	Green Mountain	11½	14	14	9	22½	71
DUNDAS.							
MOUNTAIN AGR. SOCIETY.							
Judge—Robt. McKay, Maxville.							
Mallon Bros., South Mountain	Green Mountain	12½	16	19	8½	22½	78½
W. T. Begg, do	do	13	15½	18	9	22	77½
Frantz Bros., do	White Star	11½	15	18½	8	19½	70½§
HALTON.							
NELSON AND BURLINGTON AGR. SOCIETY.							
Judge—Jas. Boyd, Markham.							
Jno. Hetherington, Campbellville, R.R. 3	Carman	13	16	18	9	32	88
Jabez Clark, Burlington	Green Mountain	12	15	18	9	32	86

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
HALTON—*Continued.*		(15)	(17)	(20)	(10)	(38)	(100)
NELSON AND BURLINGTON AGR. SOCIETY.—*Continued.*							
F. Wilkinson, Freeman, R.R. 2	Dooley	12	15	19	9	30	85
I. I. Devitt, do R.R. 2	Davies Warrior	12	15	19	9	26½	81½
J. T. Tuck, Port Nelson	Delaware	11	15	16	9	28½	79½
G. S. Dynes, Burlington	Prince Henry	12	14	19	9	26½	78½
F. L. Walker, do Box 403	do	10	15	18	9	28	78
Jno. Hislop, Freeman, R.R. 2	do	11	15	17	9	27	77
J. A. Pettit, do R.R. 2	Green Mountain	11	14	16	9	25	75
Colin Smith, do R.R. 2	Delaware	11	15	17	8	23½	74½
C. N. Blanshard, V.S., Freeman, R.R. 2	Green Mountain	11	15	16	6	24	72
HASTINGS.							
MADOC AGR. SOCIETY.							
Judge—J. J. Virtue, Enniskillen.							
H. Rollins, Cooper	Comet	14	16½	19½	10	32	92
W. T. Harrison, Madoc	Cobbler	13½	16	19	10	31	89½
Jas. Moore, Queensboro	do	13	16	19	10	30	88
J. S. Empeys, Eldorado	Hustler	14	16	19	8	29½	86½
H. Blakely, do	Delaware	12	16	18	8	30	84
J. Chambers, do	Comet	13	15	19	7	29	83
Jno. Moore, Queensboro	Gold Coin	13½	15	17	8	27	80½
Chas. Robinson, Eldorado	Comet	12	16	16	7	39	80
F. Comerford, Eldorado	Uncle Sam	12½	16	15	9	27	79½
Samuel McClary, do	Records	11	16	19	7	26	79
John Lewis, Madoc	Cobbler	13	16	16	6	27	78
Jas. Caskey, Madoc	do	12	16	15	6	27	76
STIRLING AGR. SOCIETY.							
Judge—Jas. Middagh, Winchester.							
M. Shea, Stirling	Irish Cobbler	13	16	20	9	27¾	85¾
F. Faulkner, Holloway, R.R. 2	Sir W. Raleigh	13	16	20	9	27	85
T. J. Thompson, Stirling, R.R. 1	Irish Cobbler	13	16	20	9	25¼	83¼
J. A. Juby, do R.R. 2	Water Flow	13	16	20	9	22¾	80¾
A. B. Fargey, do R.R. 2	Wonderful	13	16	19	9	22¾	79¾
T. Montgomery, do R.R. 1	Irish Cobbler	11	15	18	9	20¾	73¾
Jas. A. Bailey, do	do	11	14	16	9	20½	70½
WOLLASTON AGR. SOCIETY.							
Judge—Jas. Middagh, Winchester.							
H. Stewart, Coe Hill	Green Mountain	13	16	19	10	30¾	88¾
Robt. Thompson, The Ridge	do	13	16	19	9	30½	87½
Geo. Bullied, Coe Hill	Gold Coin	12	16	19	9	30¾	86¾

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
HASTINGS—*Continued.*		(15)	(17)	(20)	(10)	(38)	(100)
WOLLASTON AGR. SOCIETY.—*Con.*							
H. Moore, The Ridge	Green Mountain	13	16	19	9	28¾	85¾
E. Moore, Lake	do	13	15	18	10	25¾	81¾
Alex. Miller, Coe Hill	do	12	15	18	9	26½	80½
Daniel Maitland, The Ridge	do	13	15	18	9	25¼	80¼
H. Hennessy, Coe Hill	Beauty of Hebron	13	15	19	9	22½	78½
C. McGregor, The Ridge	Green Mountain	13	15	16	9	24¾	77¾
Chas. Muffett, Sr., Coe Hill	do	11	15	18	9	22½	75½
Daniel Henderson, The Ridge	do	12	15	16	9	22¾	74¾
John Gilroy, Coe Hill	Irish Cobbler	11	16	15	9	22¾	73¾
D. Y. Gunter, do	Green Mountain	11	16	16	9	20¾	72¾
R. J. Henderson, The Ridge	do	11	14	16	9	21¾	71¾
Jas. Wilson, Sr., Faraday	do	12	15	15	8	21	71
Chas. Russan, Glen Alda	do	12	15	14	8	21½	70½
KENORA.							
KENORA AGR. SOCIETY.							
Judge—J. A. McDermid, Collingwood, R.R. 2.							
Geo. Alock, Kenora	Delaware	13¾	16	16	9	33¼	88
H. Webster, do	Irish Cobbler	11¾	15	12	9	31	78¾
W. L. McDonald, Kenora	Delaware	9	14	16	9	26	74
H. Thorpe, do	Irish Cobbler	8¾	15	15	9	25	72¾
Jno. Gould, do	do	8½	15	16	9	24	72½
S. Sundine, Keewatin	Rochester Rose	8	16	16	9	23	72
Jas. Pearault, Kenora	Saxon	8	16	16	9	22	71
MIDDLESEX.							
CARADOC AGR. SOCIETY.							
Judge—Alex. Morrison, Creemore, R.R. 2.							
Alex. Lamont, Mt. Brydges, R.R. 2	Dooley	14	16	18	10	34	92
D. Campbell, Mt. Brydges, R.R. 2	do	13	16	18	10	31	88
Jas. Peters, do R.R. 3	do	13	16	17	10	31	87
Jno. Walker, do R.R. 2	do	13½	16	17½	10	28	86
D. A. McNeill, Strathroy, R.R. 1	do	11½	16	17½	10	29½	84½
G. W. Watson, Mt.Brydges,R.R.2	do	12½	16	17	10	28	83½
Jno. T. Crawford.Strathroy.R.R.1	do	10½	15	16½	10	30	82
Robt. E. Miles, Mt. Brydges, R.R. 4	do	11	16	16	10	28½	81½
M. S. Leitch, Strathroy, R.R. 1.	do	10½	16	16	10	28	80½
A. Graham, do R.R. 1.	do	11	15	17	10	27	80
A. M. McNeill, do R.R. 1.	do	10	15	16	10	28	79
Ed. Trott, Mt. Brydges, R.R. 1	do	11	15	17	10	24	77
J. R. Veale, do R.R. 3	do	11	15	16	10	24	76
C. Trott, do R.R. 1	do	11	14	15	10	25	75

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
MIDDLESEX—*Continued.*		(15)	(17)	(20)	(10)	(38)	(100)
STRATHROY AGR. SOCIETY.							
Judge—Alex. Morrison, Creemore, R.R. 2.							
D. L. Crawford, Strathroy, R.R. 1	Dooley	13	16	17	10	34	90
Jas. Ogg & Son, do R.R. 2	do	13	16	17	10	32	88
D. Limon & Son, do R.R. 2	do	11	16	17	10	32	86
J. A. Sabine, do	do	11	15	18	10	30	84
D. Leitch, Mt. Brydges, R.R. 2.	do	11	16	17	10	28	82
Wm. Gripton, Strathroy, R.R. 2	do	11	15	16	10	28	80
A. Limon, do R.R. 2	do	9	15	17	10	27	78
Wm. B. Ferguson, do R.R. 2	do	11	15	16	9	26	77
H. McLean & Son, do R.R. 2	do	10	15	16	10	25	76
F. W. Grealy, do R.R. 1	do	9	14	15	10	23	71
MUSKOKA.							
GRAVENHURST AND MUSKOKA AGR. SOCIETY.							
Judge—M. M. Hunter, Onondaga.							
Jos. Short, Gravenhurst	Empire State	14½	17	19	10	34½	95
Robt. McKay, do	do	14½	16	19	10	31	90½
G. W. Miller do	Canadian Beauty	14	15	20	10	31	90
S. Polmateer, do	Empire State	14	16	19	10	30½	89½
Jessie White, c.o. Bush, Gravenhurst	Delaware	13½	16	19	10	29	87½
J. T. Galbraith, Reay	Canadian Beauty	14	15	19	10	28¼	86¼
B. Laycock, Gravenhurst	Delaware	13	16	19	10	28	86
E. Hammond, do	Irish Cobbler	13	16	19	10	27	85
Carl Laycock, do	Empire State	13	15	19	9	26½	82½
D. Morrison, Reay	Canadian Beauty	13	15	18	8	28¼	82¼
J. Groh, Gravenhurst West	Can. Standard	12	16	17	10	27	82
R. G. Young, Gravenhurst	Empire State	13	14	18	10	26	81
W. H. Tincombe, do	do	11	15	15	10	28½	79½
Geo. York, do	do	13	15	19	9	23	79
W. E. Taylor, Reay	Delaware	11	15	19	8	23	76
W. Ruttan, Gravenhurst	Empire State	11	16	15	10	23	75
MEDORA AND WOOD AGR. SOCIETY.							
Judge—Jas. H. McKee, Shelburne, R.R. 4.							
Alex. Ennis, Port Carling	Queen of Hebron	12½	16	17½	8½	28	82½
F. W. Knight, Brackenrig	Gold Coin	10½	15	17½	8½	26½	78
A. Mitchell, Bardsville	Am. Wonder	12¼	15	17	8	21½	73¾
Jos. McCully, Port Carling	Gold Coin	11	15	17	8½	21	72½
Thos. W. Knight, Brackenrig	Green Mountain	12½	15	15½	8	20½	71½
G. Fraser, do	White Elephant	11	15	15	8	21½	70½

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
MUSKOKA.—*Continued.*		(15)	(17)	(20)	(10)	(38)	(100)
NORTH MUSKOKA AGR. SOCIETY.							
Judge—F. Reeves, Humber Bay.							
L. Allison, Hillside	Green Mountain	14	16	19	10	36	95
Jno. Pleace, Huntsville	Delaware	13	16	19	9	33	90
Samuel J. Ware, Huntsville	do	12	15	19	9	33	88
Wm. M. Sinclair, do	do	13	15	19	9	30	86
Wm. Knott, do	Gold Coin	12	15	17	8	32	84
S. Martin, Ravenscliffe	Am. Wonder	13	15	17	8	30	83
A. Cochrane, Huntsville	Delaware	12	15	17	8	29	81
H. Sims, Martin's Siding	Puritan	11	15	17	9	26	78
Gordon Hill, Hillside	Green Mountain	10	15	17	9	25	76
SOUTH MUSKOKA AGR. SOCIETY.							
Judge—M. M. Hunter, Onondaga.							
Wm. Naismith, Falkenburg	Dooley	13½	17	20	10	34½	95
J. J. Beaumont, Bracebridge	Am. Wonder	15	16	19	10	32	92
Daniel Nicholls, do	do	13½	16	20	10	30	89½
H. L. Goltz, Bardsville	Dooley	12½	16	19	10	26	83½
H. Richards, Bracebridge	Davies Warrior	13	16	19	8	27	83
Ed. Nicholls, do	Comet	12	15½	18	10¼	27	82¾
J. B. Kaye, do	Green Mountain	13	16	18	10	25¼	82¼
B. C. Kaye, do	Puritan	13	14	18	10	27	82
H. B. Buckerfield, do	Delaware	13	16	20	9½	23	81½
Mrs. M. Yearley, Falkenburg	Beauty of Hebron	13	12	18	9	29	81
Alex. Barron, Bracebridge	Early Pride	13	14	20	10	23	80
STEPHENSON AND WATT AGR. SOCIETY.							
Judge—F. Reeves, Humber Bay.							
Jos. Weir, Utterson	Green Mountain	15	17	20	10	36	98
H. Patterson, do	Delaware	15	17	20	9	33	94
H. Creasor, Ullswater	Davies Warrior	15	17	20	9	32	93
J. N. Patterson, Utterson	Delaware	15	17	20	9	30	91
W. J. Brown, Box 15, Utterson	Won. of the World	13	16	19	9	29	86
Leslie Bunn, Ullswater	Irish Cobbler	13	16	19	9	28	85
N. Hammell, Raymond	Bruce's Early	13	16	18	8	28	83
A. Kay, Port Sydney	Delaware	13	16	18	8	27	82
H. Putnam, Ullswater	Davies Warrior	12	16	18	8	26	80
W. A. Suffern, Raymond	Eureka	12	15	18	8	26	79
A. J. Hughes, Port Sydney	Won. of the World	11	13	17	8	26	75
A. E. Watson, do	do do	11	13	16	8	26	74
Jno. Forsyth, Parkersville	Delaware	11	13	14	8	26	72
PARRY SOUND.							
CHRISTIE AGR. SOCIETY.							
Judge—D. English, Burketon. R. R. 3.							
Wm. Burns, Orrville	Mammoth	14	15	19	10	33	89
Jas. White, do	Great Farmer	14½	15	17	10	34	88½

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
PARRY SOUND—*Continued.*		(15)	(17)	(20)	(10)	(38)	(100)
CHRISTIE AGR. SOCIETY.—*Con.*							
Ed. White, Orrville	Green Mountain	13	15	18	9	31	86
Jas. Morrison, Maple Lake	do	10½	15	15	10	30	80½
M. H. Harker, Orrville	do	13	15	16	10	24	78
Geo. Culp, do	Ought Six	11	15	17	7	29	77§
Wm. Hurd, do	Delaware	10½	14	13	10	26	73½
F. E. Forbes, Broadbent	Mixed	10	14	16	7	28	73§
Jno. Lawson, Maple Lake	White Elephant	10	13	14	8	28	71§
MACHAR AGR. SOCIETY.							
Judge—T. G. Raynor, Ottawa.							
Wm. Towle, South River, R.R. 1	Green Mountain	14½	16½	19	10	33½	93½
Jos. McGirr, do	do	14½	16	19½	10	32½	92½
A. McKee, do R.R. 1	do	14	16½	19	10	30	89½
J. H. Tough, do R.R. 1	do	13½	16	19½	10	28	87
W. W. Snow, do	Beauty of Hebron	14	16½	19½	8	29½	85½§
Alex. Bow, do R.R. 1	Jumbo	13½	16½	19	10	27	84§
Wm. Tough, do R.R. 1	Green Mountain	12	16	19½	10	25½	83
F. J. Hearn, do	Beauty of Hebron	12½	16½	19	10	26	82§
H. Chrest, do	Ensign	13	15	19½	10	26½	82§
Jas. Hawthorn, Midford	Beauty of Hebron	14	13	18½	8	27½	79§
J. S. Cole, South River	Green Mountain	12½	14½	16	10	23½	76½
Robt. Carter, do	Beauty of Hebron	11½	15	17	9½	25	76§
W. J. Unger, do	Green Mountain	10½	16½	17½	8	20	72½
Thos. R. Bottomley, South River	Rural New Yorker	9½	16½	18½	10	18½	71§
MAGNETAWAN AGR. SOCIETY.							
Judge—D. J. Gibson, Bowmanville, R.R. 4.							
Robt. Elliott, Magnetawan	Early White	14	16	19	9	35	93
Thos. Whalley, do	Delaware	13	16	17	9	34	89
H. H. Miller, do	Beauty of Hebron	13	16	18	9	32	88
A. W. Raaflaub, do	Delaware	13	15	19	9	31	87
Jas. Stewart, do	Green Mountain	12	15	16	10	30	83
Wm. Keppy, Spence	Beauty of Hebron	13	16	19	9	25	82
B. C. Simpson, Midlothian	Early King	12½	15	18	9	27	81½
W. J. Hicks, Pearceley	Early Rose and Irish Cobbler	13	15	15	5	32	80
Jas. Barton, Magnetawan	Delaware	12	14	15	9	26	76
Wm. McLachlan, do	White Elephant	11	15	17	6	25	74
J. J. Wurm, Port Carmen	Gold Coin	12	15	17	6	23	73
Thos. L. King, Magnetawan	Green Mountain	10	14	15	9	22	70
MCKELLAR AGR. SOCIETY.							
Judge—Daniel English, Burketon, R.R. 3.							
Thos. Moffatt, McKellar	Irish Cobbler	15	15	20	10	30	90
W. F. Tait, do	Rural New Yorker	14	15	18	10	31	86§
E. Buchner, Hurdville	Green Mountain	14	15	18	10	25½	82½

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
PARRY SOUND.—*Continued.*		(15)	(17)	(20)	(10)	(38)	(100)
McKELLAR AGR. SOCIETY.—*Con.*							
Robt. A. Moore, McKellar	Early Rose	13	14	18	8	30	81§
Wm. Watkins, do	Early Northern	13½	15	20	10	24	80½§
Ed. Moffatt, do	Davies Warrior	13	14	18	10	25	80
H. Moffatt, do	do	12	13	17	10	24	76
Jos. H. Ball, do	Early Northern	11	14	18	10	24	75§
McMURRICH AGR. SOCIETY.							
Judge, W. V. Kidd, Woito.							
F. Walker, Royston	Empire State	13	16	19	8	35	91
H. Watson, Sprucedale	Cottle's Beauty	13½	15½	17	8	35	89
D. M. Cowie, do	Empire State	13	16	18	8	33	88
Robt. Blair, do	do	14	16	18	10	29	87
P. J. Farrell, do	do	10	12	20	10	33½	85½
Ed. Pearce, do	Beauty of Hebron	13	14	16	8	34	85
J. C. Marshall & Son, Sprucedale	Wonderful	13	15	15	8	33	84
M. Johnston, Royston	Empire State	10	15	19	6	33	83
R. Siebert, Sprucedale	do	22	12	18	9	29	80
Jas. Downes, do	White Elephant	12	12	18	10	26	78
PERRY AGR. SOCIETY.							
Judge—W. V. Kidd, Woito.							
C. Rose, Emsdale	Green Mountain	13	16	19	10	38	96
A. Jenkins, do	Can. Standard	14	17	19	8	32	90
H. Tibby, Fern Glen	Cottle's Beauty	14	16	15	8	36½	89½
H. Hayward, Scotia Jct.	do	13	16	16	8	33½	86½
C. L. Hayward, Emsdale	do	12	16	15	9	34	86
Ed. Hughes, do	Am. Wonder	13	15	16	8	32	84
Wm. Murdy, do	Empire State	11	15	15	8	34	83
Geo. Gilpin, do	Beauty of Hebron	10	15	15	8	32	80
M. Austin, Fern Glen	Cottle's Beauty	12	14	12	8	31	77
POWASSAN AGR. SOCIETY.							
Judge—T. G. Raynor, Ottawa.							
J. H. Jardine, Powassan	Green Mountain	14	14	19½	10	32½	90
Owen Gough, do R.R. 3	do	14	16	19½	10	28½	88
W. G. Oldfield, do	do	13	16½	16	10	32	87½
P. R. Owens, do R.R. 4	do	12	16½	19½	10	27	85
Jas. Oldfield, do	Carman No. 1	11½	16½	18	10	28½	84½
Jno. Hogan do	Green Mountain	12½	15	19	10	27	83½
Jos. Alston, do	Empire State	12½	16½	19½	10	26	82½§
D. McIntyre, do	Green Mountain	10½	16½	18½	10	26½	82
Jno. Paul, do R.R. 2	Carman No. 1	13	16½	19	10	23	81½
Wm. Keall, do	Green Mountain	13	16½	19	4	27	79½

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
PARRY SOUND.—*Continued.*		(15)	(17)	(20)	(10)	(38)	(100)
ROSSEAU AGR. SOCIETY.							
Judge—Jas. H. McKee, Shelburne, R.R. 4.							
Samuel Kettle, Jr., Maple Lake.	Irish Cobbler.....	11½	15	19	9½	23	78
Wm. McCauley, Rosseau........	Noxall	11½	14½	18	8½	23½	76
Alex. Crawford, Sr., Rosseau....	E. Middlesex.....	9	15	18	8½	25	75½
Jno. Crawford, do	Wellington.......	10½	15	15	9	25½	75
Samuel Stoneman, Turtle Lake.	Noxall...........	10½	14½	16	8½	24½	74
W. T. Wright, Rosseau........	Beauty of Hebron.	10½	14	18	8½	22½	73½
Cameron Hall, do	do .	11½	15	18	8	20	72½
R. Stoneman, Turtle Lake......	Noxall	12	16½	16½	8½	18	71½
STRONG AGR. SOCIETY.							
Judge—T. G. Raynor, Ottawa.							
Jas. Prior, Sundridge..........	Green Mountain..	14	16½	19½	10	33½	93½
S. E. McGirr, do	do ..	14½	16½	19	10	32	92
Thos. Hornibrook, Sundridge...	do ..	14½	16½	19	10	31½	91½
F. W. Hannaford, do ...	do ..	13	16½	19½	10	30½	89½
J. W. Wilson, do ...	do ..	13	16½	19½	10	30	89
J. Paget, do ...	do ..	10	16½	20	10	28	84½
Thos. Willoughby, do ...	do ..	11½	16½	18½	10	27½	84
Geo. H. Butson, do ...	do ..	12½	16½	15	10	27½	81½
J. Willoughby, do ...	do ..	10½	16½	19½	10	25	81½
Jno. Minorgan, do ...	do ..	12½	16½	16½	6	29	80½
Thos. Hodgson, do ...	do ..	10½	16½	19½	10	21	77½
D. Dunbar, Sundridge, R.R. 2..	do ..	12½	16½	14	10	22	75
Jno. Christie, do	Early White......	12½	13	19	6	26	74½
UNITED TPS. AGR. SOCIETY.							
Judge—D. J. Gibson, Bowmanville, R.R. 4.							
Wm. Todd, Maple Island	Irish Cobbler.....	13	16	18	9	33	89
Jas. W. LaBrash, Maple Island.	Green Mountain..	14	15	17	9	28	83
R. Willard, Dunchurch	do ...	12	14	16	10	30	82
W. B. Morrison, Fairhome	do ...	13	15	16	9	28	81
W. T. Lundy, Dunchurch......	do ...	12	14	14	9	30	79
Jno. Whitmell, do	Beauty of Hebron.	12	16	15	6	29	78
Jno. A. LaBrash, Maple Island.	Irish Cobbler.....	12	15	14	8	25	74
W. Brear, do .	do	12	15	15	5	26	73
Jos. Ward, do .	Early Rose.......	10	15	14	9	24	72
Jno. Saunders, Ahmic Lake....	Mixed...........	12½	15	18	5	21	71½
Jos. Whitmell, Dunchurch	Beauty of Hebron.	11	15	16	8	20	70
RAINY RIVER.							
ATWOOD AGR. SOCIETY.							
Judge—J. A. McDermid, Collingwood, R.R. 2.							
Jno. McVeigh, Sleeman	Hustler..........	13	16	20	9	32	90
A. R. Reid, Pinewood	Delaware........	11¼	16	18	9	26	80¼
A. Armstrong, Sleeman	Hustler..........	9	16	17	9	23	74

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
RAINY RIVER—*Continued.*		(15)	(17)	(20)	(10)	(38)	(100)
RAINY RIVER VALLEY AGR. SOCIETY.							
Judge—J. A. McDermid, Collingwood, R.R. 2.							
Chas. McBride, Emo	Green Mountain	11½	15	18	10	27	81½
O. Cameron, do	Delaware	10	15	14	9	25¾	73¾
C. H. McCool, Devlin	Irish Cobbler	9¾	15	15	9½	23½	72¾
SIMCOE.							
NOTTAWASAGA AND GREAT NORTHERN.							
Judge—H. L. Goltz, Bardsville.							
Alex. Morrison, Creemore, R.R. 2	Delaware	13	15	18	10	29	85
Robt. Howie, Smithdale	do	13	16	19	10	26	84
F. Brice, Batteau, R.R. 1	do	13	15	17	10	25	80
Mac. Gadway, Creemore, R.R. 2		11	15	18	10	25½	79½
Jno. Fisher, Batteau	Delaware	13	15	18	10	23	79
Alex. McDermid, Batteau, R.R. 1	do	10	15	18	10	21½	74½
TEMISKAMING.							
CHARLTON AGR. SOCIETY.							
Judge—P. R. Owens, Powassan.							
O. Attwater, Charlton	Cobbler	14	16	19	10	33	92
F. Pummell, do R.R. 2	Beauty of Hebron	14½	16	19	9	31	89½
J. A. Beaumont, Charlton	do	13	16	18	7	34	88
W. Rodgers, do	Cobbler	13½	15	19	9	31	87½
M. Whalen, Costello	Early Eureka	13	16	19	6	32	86
Bert Nickerson, Charlton	Dooley	12½	15	18	9	31	85½
F. F. Shadick, do	Beauty of Hebron	12½	15	18	9	29	83½
N. M. Fraser, do R.R. 2	Early Ohio	13	14	18	6	31½	82½
M. Kenny, do	do	12	16	17	6	31	82
Ed. Cuddy, do	Cobbler	13	16	16	7	29	81
J. Hughes, do	Green Mountain	12	14	16	9	29	80
Jno. McAuley, do	Beauty of Hebron	11	15	15	8½	29	78½
P. O. Malley, do	do	11	16	16	6	29	78
ENGLEHART AGR. SOCIETY.							
Judge—P. R. Owens, Powassan.							
Jas. Harman, Heaslip	Cobbler	13½	16	19	9½	35	93
W. Schell, do	Delaware	14½	16	19	8½	34½	92½
Geo. Harman, do	Cobbler	13½	16	19	9½	34	92
E. Winlaw, do		13½	16	18	10	34	91½

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
TEMISKAMING—*Con.*		(15)	(17)	(20)	(10)	(38)	(100)
ENGLEHART AGR. SOC.—*Con.*							
Thos. S. Woollings, Englehart..	Gold Coin........	13½	16	18	7	33½	88
W. S. Edwards, Englehart, Box 329	Delaware........	12	15	18	9½	32½	87
A. F. Richmond, Englehart.....	Gold Coin........	13	15	18	8	32	86
Amos Heaslip, Heaslip........	Snowflake........	13½	14	18	9	29	83½
Jno. Scott, do	Cobbler	11	15	15	9	33	83
R. Emerick, Englehart........	do	11½	14	18	9	29	81½
H. Schaffner, Sr., Brentha......	Delaware........	12½	15	17	6	29	79½
Jno. Allen, Englehart..........	Early Eureka....	11	15	16	8	29	79
Geo. Will, do	Delaware........	12	15	15	5	30	77
F. Kiehna, Brentha	Empire State.....	11	14	15	8	26	74
MATHESON AGR. SOCIETY.							
Judge—P. R. Owens, Powassan.							
N. E. Johnston, Matheson......	Green Mountain..	14	16	19	9½	34	92½
G. H. Hoard, do	Cobbler	13	15	18½	7	34	87½
Sydney Smith, do	do	13	16	18	8	32	87
Geo. Fleming, do	Snowflake........	13½	16	18	6	33	86½
W. Kirstine, do	Green Mountain..	13½	16	17	8	31½	86
N. Peterson, do	do ...	12	16	18	8	31½	85½
Thos. Waldron, do	Early Eureka....	12	15	18	9	31	85
Thos. Gray, do	Early Ohio.......	13½	16	18	6	31	84½
W. Monahan, do	Green Mountain..	12	15	18	7	32	84
J. E. Mills, do	Beauty of Hebron.	13	16	18½	6	30	83½
A. Oslin, do	....	11	16	18	8	30	83
J. Dambrowitz, do	Mixed............	12½	15	18	6	31	82½
Chas. Veitch, do	....	12½	16	18	7	28	81½
THUNDER BAY.							
OLIVER AGR. SOCIETY.							
Judge—J. McKay, Dryden.							
Thos. Hughes, Murillo	Irish Cobbler.....	13½	16	19½	10	26½	85½
J. R. Hutchison, Slate River...	do	13	16½	19	10	26½	85
R. R. Everett, Murillo.........	Delaware........	14	16	19	9	22½	80½
R. B. Martin, do	Irish Cobbler.....	13	16	18¼	10	20½	77¾
H. McNally, do	do	13	15	18	9½	22	77½
Jno. McDonald, do	do	11	14	19	9¼	24	77¼
Wm. Reid, do	do	11½	15	16½	10	22½	75½
R. Bingham, do	do	11½	14	17	10	21½	74
F. Cook, do	do	11½	15	16	10	20½	73
E. Olson, do	Carman No. 1.....	10	16	16	7	24	73
Chas. Gorton, do	Irish Cobbler.....	11	14	17	9	21¾	72¾
R. McKenzie, do	do	11½	14½	17	9½	20¼	72¾
J. H. Veley, do	do	11	14	17	9	21½	72½
A. Gorton, do	do	11½	15	16	9	21	72½
A. Todd, do	do	11	16	15	9½	21	72½

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
THUNDER BAY.—*Continued.*		(15)	(17)	(20)	(10)	(38)	(100)
OLIVER AGR. SOCIETY.—*Con.*							
A. Nordland, Murillo	White Elephant	11	14½	17	9	20½	72
Jas. Tonkin, 134 May St. S., Fort William	Green Mountain	11½	13	18	9	20½	72
Chas. R. B. Hill, Murillo	Irish Cobbler	10	16	16	8	22	72
H. T. Gray, Rosslyn	do	11½	16	14	8½	21½	71½
W. McNally, Murillo	do	11	15	14	10	21¼	71¼
Wm. Williamson, Murillo	do	12	13	15	9	21½	70½
WHITEFISH VALLEY AGR. SOCIETY.							
Judge—Jno. McKay, Dryden.							
Wm. C. Grant, Hymers	Carman No. 1	13½	15½	19	8½	26½	83
Jos. Whithenshaw, Hymers	Early Eureka	13	15	19	9½	23	79½
F. J. Killans, Nolalu	Beauty of Hebron	13½	16	17½	9	21½	77½
D. Williams, Scobie West	Early Six Weeks	12½	14½	17	10	22½	76½
Wm. Couch, South Gillies	Early Eureka	11½	14½	18	9	23	76
Geo. E. Hymers, Hymers	do	11½	15	19	7	23	75½
H. P. Sisson, do	Irish Cobbler	11½	14	17½	9	22¼	74¼
B. Sutherland, do	do	9½	16	17	8	23½	74
A. Sitch, do	Eureka	9½	14	17	9½	23½	73½
E. Sitch, Flint	Irish Cobbler	11½	14¾	16½	9	21¾	73½
A. Parker, South Gillies	do	9½	14	16	9¼	23½	72¼
F. Sharp, Hymers	Eureka	13	15	17	7	20	72
WELLAND.							
FENWICK AGR. SOCIETY.							
Judge—Jas. Boyd, Markham.							
Geo. Kappler, Fenwick, R.R. 5	Green Mountain	13	16	18	10	34½	91½
J. H. Haist, do R.R. 5	Dakota Red	15	16	19	10	30½	88½§
Jacob Haist, Ridgeville, R.R. 1	Green Mountain	13	16	18	9	32	88
Clemens Bros., Fenwick, R.R. 5	do	12	15	16	10	34	87
H. Stirtzinger, do R.R. 5	do	13	15½	18	9	31	86½
M. Stirtzinger, do R.R. 5	do	11	17	16	10	32	86
Jas. M. Lippert, Fenwick	do	12	16	18	9	30	85
Robt. Bishop, do R.R. 5	do	11	15	19	9	30½	84½
F. C. Haist, Ridgeville, R.R. 1	Hustler	12	16	18	9	30½	83½§
O. L. Beckett, do R.R. 1	Beckett's Cross	12	16	17	9	31	83§
B. A. Pattison, do	Am. Wonder	12	16	17	9	28	80§
D. Haist, Fonthill	Green Mountain	12	16	17	8	26	79
Ecker Bros., St. Anne, R.R. 1	do	9	15	17	8	28	77
WELLINGTON.							
ERIN AGR. SOCIETY.							
Judge—H. L. Goltz, Bardsville.							
J. L. Overland, Erin	Green Mountain	12½	15	19	10	31	87½
Jno. Smith, Waldemar	Wee MacGregor	12½	15	19	10	30	86½
Jas. Milloy, Erin	Green Mountain	11½	15	19	10	29	84½
Geo. Overland, Orton	do	11½	15	18	10	29½	84

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

POTATOES.

Competitors in Order of Merit.	Name of variety.	* General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	† Apparent yield.	Totals of scores.
WELLINGTON—*Con.*		(15)	(17)	(20)	(10)	(38)	(100)
ERIN AGR. SOC.—*Con.*							
Jas. McKitrick, Orton	Green Mountain	11½	15	19	10	28	83½
A. Brown, Erin	Noxall	12	15	19	7	28	81
Chester Burt, Hillsburg	Green Mountain	12	15	19	8	26	80
F. McMillan, do	do	11½	15	19	9	25	79½
Mack Leitch, Guelph	do	9½	15	19	10	24	77½
H. L. Matheson, Hillsburg, R.R.2	Dooley	10	15	18½	10	23½	77
S. E. Griffin & Son, Acton	do	10	15	18	10	23	76
D. Gray & Sons, Hillsburg		10½	15	16	9½	22	73
Coke Bros., Erin	Delaware	11	14	17½	10	20	72½
Samuel W. Bingham & Sons, Hillsburg, R.R. 2	World's Fair	10	14	19	10	19	72
W. H. Burrows, Hillsburg		9	12	19	10	20	70
WENTWORTH.							
ANCASTER AGR. SOCIETY.							
Judge—D. Smith, Smithdale.							
Jno. Pickard, Ancaster	Empire State	10½	14	18	10	28	80½
N. W. Shaver, do	Green Mountain	12	14	18	10	26	80
Wm. E. Shaver, do R.R. 1	do	11	13	18	9	28	79
E. Lyons, do		10	12	18	10	24	74
Geo. M. Brown, Jerseyville	Green Mountain	10	12	15	10	25	72
Jas. Oakes, Ancaster		9	12	15	8	27	71
T. G. Brown, do	Green Mountain	9	12	14	10	25	70
WATERDOWN AGR. SOCIETY.							
Judge—D. Smith, Smithdale.							
Wm. Thompson, Waterdown, R.R. 1	Comet	11	15	16	10	29	81
J. H. Drummond, Millgrove	Roxbury	11	14	15	10	30½	80½
D. Thompson, Waterdown	Comet	11	15	16	10	28	80
W. H. Drummond, do	Green Mountain	11	15	16	10	27½	79½
Jno. Bennett, Campbellville	Dooley	11	14	16	10	28	79
W. J. Ptolemy, Flamboro Centre	Noxall	10½	14	16	10	27½	78
F. F. Allan, Waterdown	Comet	9	15	15	10	25	74
R. Forth, do		8	14	14	10	27	73
G. W. Lambier, Millgrove	Dooley	9	12	15	8	27	71
Wm. Attridge, Waterdown	Comet	9	14	15	10	22	70

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

MANGELS.

Competitors in Order of Merit.	Straightness of rows.	Method of seeding.	Proper thinning and cleaning.	Thoroughness of cultivation.	Freedom from insects and diseases.	Purity and uniformity of roots.	Shape and quality of roots.	Yield of roots per acre.	Totals of scores.
DURHAM.	(5)	(5)	(10)	(10)	(10)	(10)	(15)	(35)	(100)
PORT HOPE AGR. SOCIETY.									
Judge—Geo. B. Little, Agincourt.									
W. J. Crowhurst, Port Hope....	5	5	9	9	8½	8	14	28	86½
H. A. Holdsworth, Cobourg, R.R. 4	4½	4½	8½	8	9	8½	13	26	82
G. E. Austin, Port Hope, R.R. 4	3½	4½	8	7½	8½	8	13	27	80
T. B. Westington, do R.R. 1	4½	4½	9	9	8	7½	12½	24	79
G. H. Martyn & Son, Port Hope, R.R. 1	4	4½	7	8½	9	7	12	23	75
Thos. Coyte, Port Hope, R.R. 3..	3	4	6½	7	8	7	12	25	72½
GREY.									
KEPPEL AGR. SOCIETY.									
Judge—Jas. H. McKee, Shelburne, R.R. 4									
Geo. McKenzie, Kemble, R.R. 1	3	4	8½	9	9½	9	13	28½	84½
L. B. Danard, do R.R. 1	4	4	8½	9	9½	8½	13½	27	84
Samuel Perkins, do R.R. 1	4½	4	7½	9	9½	7½	12	29	83
A. Taylor, do R.R. 2	4	4	9	9	9½	8	12	27	82½
M. Bedell, do R.R. 2	4	4	9	9½	9½	7½	11½	27	82
L. Hurlbut, do R.R. 2	4½	4	8½	5½	9½	8½	12½	27	80
D. Davidson, do R.R. 2	3½	4	7½	9	9	7½	10½	27	78
YORK.									
SCARBORO AGR. SOCIETY.									
Judge—E. H. Purdy, Port Perry.									
Wm. G. Rennie, Agincourt.....	5	4	10	10	10	10	15	35	99
H. Clark, do	5	4	9	10	10	9	14	35	96
Wm. Brown, do R.R.	4	4	8	8	10	8	12	35	89
C. Lamaroux, Milliken	5	4	9	10	9	8	12	31	88
D. Gillham, Agincourt	5	4	8	8	8	9	12	33	87
Jno. Underwood, Malvern.......	4	4	8	8	10	8	12	32	86
G. Patterson, Agincourt........	4	4	8	8	8	8	12	33	85
F. Yeamans, do R.R.....	4	4	8	8	9	8	12	31	84
A. P. Wheeler, do R.R.....	5	4	8	7	10	7	12	30	83
Wm. A. Patterson, Agincourt...	4	4	7	8	9	8	12	29	81

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

TURNIPS.

Competitors in Order of Merit.	Straightness of rows.	Method	Proper thinning and cleaning.	Thoroughness of cultivation.	Freedom from insects and diseases.	Purity and uniformity of roots.	Shape and quality of roots.	Yield of roots per acre.	Totals of scores.
BRANT.	(5)	(5)	(10)	(10)	(10)	(10)	(15)	(35)	(100)
Paris Agr. Society.									
Judge—D. McClure, Toronto.									
Haas Bros., Paris	4	4	8½	8	8	9	13	27	81½
Jos. Martin do	4½	4½	9	9	8	8	13	24	80
W. Webber, do	3	3½	8	8	9	8	13	26	78½
D. Patton, do	4	4	8	8	8	8	13	25	78
BRUCE.									
Teeswater Agr. Society.									
Judge—Robt Berry, St. Mary's.									
Andrew McKague, Teeswater	3½	4½	9	8	9½	8½	14	32	90
Jno. S. Armstrong, Formosa	4½	4	9	8	9½	8½	14½	30	88
K. McKenzie, Teeswater	4	3½	8½	8½	9	7½	14	27	82
Alex. McKague, do	5	3	6½	8	9	8	14	28	81½
T. B. Aitken, do	3½	3½	7	6½	9½	8	14½	28	80½
J. D. Little, do	3½	4	7½	9	8	7½	13	27	79½
T. A. Goodfellow, do	3	4½	9½	9½	7	6½	12	25	77
D. Grant, Formosa	4½	4	8	9½	7½	7	12	23	75½
Robt. Grant, Teeswater	3	3½	8	6½	7	8	13	25	74
GREY.									
Proton Agr. Society.									
Judge—Wm. Hudd, Orangeville.									
Geo. Bell & Sons, Corbetton, R.R. 3	5	5	9	9	8	9	14	31	90
R. J. Cornett, Melancthon, R.R.4	5	5	8	9	9	8	14	30	88
Jas. McPherson & Sons, Dundalk, R.R. 2	5	5	10	10	9	8	13	26	86
Middleton Bros., Dundalk, R.R. 1	5	5	10	10	9	8	12	24	83
R. N. Fowler & Son, Dundalk, R.R. 2	5	5	9	9	8	8	14	23	81
R. Kinnell, Hopeville, R.R. 1	5	5	10	9	9	7	12	22	79
Jos. Coulter, Dundalk, R.R. 2	5	5	9	8	10	8	12	20	77
W. A. Goodfellow, Dundalk, R.R.1	5	5	8	9	7	7	13	22	76
R. J. Cronin & Son, Riverview, R.R. 1	5	5	10	9	10	7	12	16	74
P. J. Fernane & Son, Dundalk, R.R. 2	5	4	8	7	9	8	11	21	73
Jas. Elliott, Corbetton, R.R. 3	5	5	6	6	10	7	13	19	71
HURON.									
Blyth Agr. Society.									
Judge—Robt. Berry, St. Mary's.									
David Laidlaw, Blyth	4½	3½	8	10	8½	8	13	25	80½
Jas. Jackson, Walton	4½	3	9	9½	8½	8	13	23	78½
J. & T. Laidlaw, Walton, R.R. 3	5	3	8	9½	9	8½	13	22	78

NOTE.—The figures in parenthesis at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.—*Con.*

TURNIPS.

Competitors in Order of Merit.	Straightness of rows.	Method of seeding.	Proper thinning and cleaning.	Thoroughness of cultivation.	Freedom from insects and diseases.	Purity and uniformity of roots.	Shape and quality of roots.	Yield of roots per acre.	Totals of scores.
GREY.—*Continued.*	(5)	(5)	(10)	(10)	(10)	(10)	(15)	(35)	(100)
BLYTH AGR. SOCIETY.—*Con.*									
Jas. Cuming, Blyth	3½	4	8½	8	6	8	12	23½	73½
Wm. Fear, do	5	4½	9½	10	9½	7	14	13	72½
Jno. Barr. do	3	4	9	8½	7	7½	11	22	72
R. G. McGowan, Blyth	2½	4	9½	9	7½	6	11	21	70½
YORK.									
MARKHAM AGR. SOCIETY.									
Judge—Alex. Morrison, Creemore.									
Geo. Tran, Claremont	5	4½	10	9	8	8	13	33	90½
Jas. Torrance, Markham	4½	4	9	9	8	9	13	30	86½
Lawrie Bros., do	5	4	8	9	8	9	13½	28	84½
J. B. Gould, do	5	4	8	8	8	8	12½	28	81½
W. G. Rennie, Agincourt	4½	4	8	8	7	8	13	27	79½
W. J. Bennet, Milliken	4½	4	7	8	7	8	12½	26	77
P. H. Reesor, Markham	4	4½	7	8	8	8	12	25	76½
Chas. Boynton, Gormley R.R. 2	4½	4	7	7	6	8	12	25	73½
Jno. Young, Milliken	4	4	7	8	7	8	10	24	72

NOTE.—The figures in parenthesis at the top are maximum possible scores.

GRAIN FROM STANDING FIELD CROP COMPETITIONS.

Prize Winners at the Canadian National Exhibition, 1919.

Prize Won.	Competitor and Address.	Variety.
OATS.	*Grain in Sacks.*	
Division No. 1—		
1st	R. P. Riley, Milford Bay	O.A.C. No. 72.
2nd	H. L. Goltz, Bardsville	O.A.C. No. 72.
Division No. 2—		
1st	Thos. Cosh, Bobcaygeon	Yellow Russian.
2nd	H. R. Seymour, Bobcaygeon	Yellow Russian.
3rd	R. A. Scott, Norwood, R.R. 2	Banner.
4th	J. S. Moore, Bellamy's, R.R. 1	O.A.C. No. 72.
Division No. 3—		
1st	McCowan Bros., Scarboro	Yellow Russian.
2nd	Andrew Schmidt, Mildmay	O.A.C. No. 72.
3rd	S. W. Bingham & Sons, Erin	Banner.
4th	John McDermid, Lucknow, R.R. 6	O.A.C. No. 72.
FALL WHEAT.		
Division No. 2—		
1st	D. Hetherington, Bobcaygeon	Sleep and I'll pay the Rent.
Division No. 3—		
1st	Geo. R. Barrie, Galt, R.R. 7	Dawson's G. Chaff.
SPRING WHEAT.		
Division No. 2—		
1st	Samuel McMillan, Cobden, R.R. 6	Marquis.
Division No. 3—		
1st	Robt. Watson, Woodbridge, R.R. 2	Marquis.

GRAIN FROM STANDING FIELD CROP COMPETITIONS.—*Continued.*

PRIZE WINNERS AT THE CANADIAN NATIONAL EXHIBITION, 1919.—*Con.*

Prize Won.	Competitor and Address.	Variety.
OATS.	*Sheaf Exhibit.*	
Division No. 1—		
1st	Fletcher Walker, Royston	
2nd	H. L. Goltz, Bardsville	O.A.C. No. 72.
3rd	J. Short, Gravenhurst	
4th	R. P. Riley, Milford Bay	O.A.C. No. 72.
Division No. 2—		
1st	John Lean, Cameron	O.A.C. No. 72.
2nd	Thos. Cosh, Bobcaygeon	Yellow Russian.
3rd	Thompson Bros., Indian River, R.R. 2	O.A.C. No. 72.
4th	M. M. Boyd & Co., Bobcaygeon	Banner.
Division No. 3—		
1st	McCowan Bros., Scarboro	Yellow Russian.
2nd	S. W. Bingham & Son, Erin	Banner.
3rd	Geo. E. Wood, Cainsville, R.R. 1	O.A.C. No. 72.
4th	Andrew Schmidt, Mildmay	O.A.C. No. 72.
FALL WHEAT.		
Division No. 2—		
1st	D. Hetherington, Bobcaygeon	Sleep and I'll pay the Rent.
2nd	Thos. Kingsboro, Dunsford	Sleep and I'll pay the Rent.
3rd	Jos. N. Taylor, Dunsford	Sleep and I'll pay the Rent.
Division No. 3—		
1st	Geo. A. Poole, Harley	
SPRING WHEAT.		
Division No. 2—		
1st	A. Hatfield, Stirling	Colorado.
Division No. 3—		
1st	W. P. Johnston, Stouffville	Goose.
2nd	Robt. Watson, Woodbridge, R.R. 2	Banner.

GRAIN FROM STANDING FIELD CROP COMPETITIONS.—*Continued.*

PRIZE WINNERS AT THE CENTRAL CANADA EXHIBITION, 1919.

Prize Won.	Competitor and Address.	Variety.
OATS.	*Grain in Sacks.*	
1st	Samuel W. Bingham & Sons, Hillsburg, R.R. 2	Banner.
2nd	John McDiarmid, Lucknow, R.R. 6	O.A.C. No. 72.
3rd	Peter B. Snider, Bainsville	O.A.C. No. 72.
SPRING WHEAT.		
1st	Samuel McMillan, Cobden, R.R. 6	Marquis.
FALL WHEAT.		
1st	David Hetherington, Bobcaygeon	Sleep and I'll pay the Rent.
2nd	Geo. R. Barrie, Galt, R.R. 7	
OATS.	*Sheaf Exhibit.*	
1st	McCowan Bros., Scarboro	Yellow Russian.
2nd	Thompson Bros., Indian River	O.A.C. No. 72.
3rd	D. Borho, Formosa, R.R. 1	O.A.C. No. 72.
4th	J. R. Hutchison, Slate River	O.A.C. No. 72.
SPRING WHEAT.		
1st	W. P. Johnson, Stouffville	Goose.
2nd	Thos. Steacy, Lansdowne	Marquis.

GRAIN FROM STANDING FIELD CROP COMPETITIONS.—*Continued.*

ONTARIO PROVINCIAL WINTER FAIR, GUELPH, 1919.

Prize Won.	Competitor and Address.	Variety.
OATS.	Grain in Sacks.	
1st	Wm. Hutcheon, Rockwood, R.R. 1	O.A.C. No. 72.
2nd	R. L. Taylor, Brussels, R.R. 2	
3rd	Richard Wilton, Wingham, R.R. 1	O.A.C. No. 72.
4th	Andrew Schmidt, Mildmay	O.A.C. No. 72.
5th	Alex. McKague, Teeswater	O.A.C. No. 72.
6th	Robt. McCowan, Scarboro	Yellow Russian.
7th	Mack Leitch, Erin	
8th	Wm. Winer & Sons, Guelph, R.R. 3	O.A.C. No. 72.
9th	John McDermid, Lucknow, R.R. 6	O.A.C.
10th	Wm. Webster, Lucknow, R.R. 2	O.A.C. No. 72.
SPRING WHEAT.		
1st	Robt. Watson, Woodbridge, R.R. 2	Marquis.
2nd	Seraphine Schmidt, Formosa, R.R. 1	Marquis.
3rd	Andrew Schmidt, Mildmay, R.R. 1	Marquis.
4th	Wm. Webster, Lucknow, R.R. 2	Marquis.
5th	Neil McLean, Rockwood, R.R.	Marquis.
FALL WHEAT.		
1st	Wm. Winer & Sons, Guelph, R.R. 3	Imperial Amber.
2nd	Geo. R. Barrie, Galt, R.R. 7	Dawson's G. Chaff.
3rd	Robt Cowan, Galt, R.R. 3	Dawson's G. Chaff.
	Championship.	
BEANS.	Robt. Cowan, Galt, R.R. 3.	
1st	F. W. Scott & Sons, Highgate	Boston Improved.
PEAS.		
1st	Wm. Bray, Sr., Lion's Head	Yellow Eye.
CORN (DENT).		
1st	Geo. R. Barrie, Galt, R.R. 7	Wisconsin No. 7.
2nd	Arch. McColl, Rodney, R.R. 2	Dent.
CORN (FLINT)		
1st	Clarke & Son, Highgate	
2nd	A. S. Maynard, Chatham, R.R. 3	Salzer's N. Dakota.
3rd	R. H. Johnston, Chatham, R.R. 3	Longfellow.
4th	Robt. G. Dawson, Niagara-on-the-Lake	Salzer's N. Dakota.
5th	J. Trothen & Son, Wallacetown, R.R. 1	Longfellow.
POTATOES.		
1st	Wm. Naismith, Falkenburg	Dooley.
2nd	H. L. Goltz, Bardsville	Dooley.
3rd	F. W. Knight, Brackenrig	Gold Coin.
4th	Albert Brown, Erin	Noxall.
5th	H. F. Loney, Wiarton, R.R. 2	American Wonder.
MANGOLDS.		
1st	W. G. Rennie, Agincourt	
2nd	Geo. McKenzie, Kemble	Yellow Vine.
TURNIPS.		
1st	Andrew MsKague, Teeswater, R.R. 1	Hall's Westbury.
2nd	Alex. B. McKague, Teeswater	Derby.

GRAIN FROM STANDING FIELD CROP COMPETITIONS.—*Continued.*

PRIZE WINNERS AT THE OTTAWA WINTER FAIR, OTTAWA, 1920.

Prize Won.	Competitor and Address.	Variety.
OATS.	Grain in Sacks.	
1st	J. S. Moore, Bellamy's, R.R. 1	O.A.C. No. 72.
2nd	Chas. E. Bonnycastle, Campbellford	O.A.C.
3rd	Luther E. Mountjoy, Burketon	Irish.
4th	Barrie Bros., Port Hope	Sensation.
5th	Jas. Higginson, Inkerman	White Wave.
6th	Fred. Gosselin, Rainy River	Gold Rain.
7th	Thos. H. Lewis, Oxdrift	Gold Rain.
8th	J. M. English, Burketon	Industrial.
9th	R. N. & J. E. Woods, Metcalfe	Banner.
10th	F. R. Gourlay, Kinburn	O.A.C. No. 72.
SPRING WHEAT.		
1st	Samuel McMillan, Cobden, R.R. 6	Marquis.
2nd	F. R. Gourlay, Kinburn	Marquis.
3rd	R. E. Osborne, Bowmanville, R.R. 2	Marquis.
4th	Thos. Steacy, Lansdowne	Marquis.
5th	Jno. Allin & Son, Orono, R.R. 1	Marquis.
CLOVER.		
1st	J. S. Corner, Oxdrift	....
CORN (DENT).		
1st	J. H. Dietrich, Comber, R.R. 2	Wisconsin No. 7.
2nd	W. G. Sellars, Amherstburg, R.R. 1	Wisconsin No. 7.
3rd	Wyatt Walker, Bellamy's, R.R. 1	Wisconsin No. 7.
4th	Geo. R. Barrie, Galt, R.R. 7	Wisconsin No. 7.
5th	Wm. H. H. Snow, Blenheim	Dent.
CORN (FLINT).		
1st	R. J. Johnston, Chatham, R.R. 3	Longfellow.
2nd	A. S. Maynard, Chatham, R.R. 3	Flint.
3rd	J. S. Moore, Bellamy's, R.R. 1	Flint.
4th	Norman Crane, Wallacetown, R.R. 1	Longfellow.
POTATOES.		
1st	Hugh A. Woods, Metcalfe	Freeman.
2nd	A. F. Richmond, Englehart	Gold Coin.
3rd	Gould Bros., Kenora	....
4th	Sydney Smith, Matheson	Cobbler.
5th	Andrew McKee, South River, R.R. 1	Green Mountain.

OATS.

Competitors who will thresh and keep separate grain from the fields entered in the Standing Field Crop Competitions.

E. D. Evoy, Bar River.
Alex. Duff, Bruce Mines.
G. H. Caldwell, Carp.
H. L. Black, Stittsville.
Peter Anderson, Kenmore.
C. Collison, S. Mountain.
Thos. Carlyle, Osgoode, R.R. 4.
S. D. Thorpe, S. Mountain.
Mellan Bros., S. Mountain.
Wm. G. Timmins, Inkerman.
Geo. P. Timmins, Inkerman.
T. A. Kelly, Millbrook, R.R. 1.
R. O. Larmer, Millbrook.
W. F. Pound, Aylmer, R.R. 1.
Wm. Abell, Aylmer, R.R. 1.
E. V. Docker, Wallacetown, R.R. 1.
S. M. Pearce, Fingal, R.R. 1.
W. S. Pearce, Wallacetown, R.R. 1.
S. L. Pearce, Wallacetown.
R. G. Garbutt, Wallacetown, R.R. 1.
E. H. Pearce, Wallacetown, R.R. 1.
Jas. Booth, Ayton.
A. Huehn, Neustadt, R.R. 1.
Wm. Marshall, Neustadt, R.R. 1.
Jas. Park, Jr., Hanover, R.R. 1.
Alex. Grierson, Hanover, R.R. 1.
W. A. Livingston, Hanover, R.R. 1.
M. Barber, Durham, R.R. 3.
A. Edge, Durham, R.R. 1.
J. H. Wilson, Milton.
H. Richardson, Milton.
Geo. A. Wilson, Georgetown.
H. Frankland, Hornby.
E. Readhead, Milton.
Ed. McCann, Milton.
Wm. Brown, Sr., Gorrie, R.R. 2.
John Wiley, Gorrie.
A. McLaughlin, Gorrie, R.R. 1.
A. W. Keil, Gorrie, R.R. 2.
H. Edgar, Gorrie, R.R. 2.
Robt. F. Edgar, Gorrie, R.R. 2.
Chas. Dickett, Gorrie, R.R. 1.
R. J. Sanderson, Fordwick.
R. Wilkin, Palmerston, R.R.
E. Broderick, Hensall.
E. Krueger, Dashwood.
H. Krueger, Dashwood.
O. Klopp, Dashwood.
L. H. Rader, Dashwood.
Wm. Pearce, Hensall.
John Manson, Dashwood, R.R. 1.
E. F. Klopp, Dashwood.
A. Rannie, Zurich, R.R. 3.
Jas. Hand, Alvinston.
Jas. McCallum, Alvinston.
T. H. Lovell, Alvinston.
D. Hayter, Alvinston.
L. W. Oke, Alvinston.
D. G. Maddock,, Alvinston.
Geo. Lightfoot, Alvinston.
Jas. A. Hair, Watford, R.R. 7.
W. F. McFadden, Florence, R.R. 3.
J. H. Buchanan, Thamesville, R.R. 2.
John Johnson, Port Lambton.
H. Shiller, Port Lambton.
S. S. Deyo, Wallaceburg.
Bert Payne, Port Lambton.
F. Burgua, Sombra.
John McRae, Port Lambton.
H. Chalmer, Smith Falls.
John Hamer, Lombardy.
D. Joynt, Lombardy.
Geo. Boxall, Mossley, R.R. 2.
Jos. Woods, Dorchester, R.R. 1.
L. Fenton, Mossley, R.R. 2.
F. L. Atkins, Mossley, R.R. 2.
H. Mathews, Putnam.
John Dixon, Ailsa Craig, R.R. 2.
W. L. Corbett, Ailsa Craig, R.R. 2.
J. J. Graham, Ailsa Craig, R.R. 3.
Hughes Bros., Ailsa Craig.
Jas. McFarlane, Ailsa Craig.
W. I. Hogg, Thamesford, R.R. 2.
John Bradshaw, Thamesford.
Mercer Bros., Thamesford.
Alex. Robb, Atwood, R.R. 2.
W. A. Nelson, Keene, R.R. 1.
M. O'Keefe, Keene, R.R. 1.
W. Steinkrauss, Peterboro, R.R. 2.
R. J. Waller, Peterboro, R.R. 3.
Wm. Whittington, Peterboro, R.R. 3.
Jas. D. Fowler, Peterboro.
R. A. Wilson, Peterboro, R.R. 6.
A. Charbonneau, Alfred.
O. Parisien, Alfred.
M. Leroux, Plantagenet.
E. St. Denis, Plantagenet.
E. Parisien, Alfred.
Jos. Robillard, Alfred.
J. C. Bulmer, Cobden, R.R. 1.
Thos. F. Smith, Cobden, R.R. 3.
W. J. Connelly, Cobden, R.R. 3.
Edwin Kenny, Pembroke, R.R. 2.
A. T. Graham, Cobden, R.R. 3.
Chas. Spence, Lovering.
Bert Nickerson, Charlton.
John Morrisey, Charlton.
O. Attwater Charlton.
F. H. Kenny, Charlton.
Wm. Netherton, Brentha.
R. Emerick, Englehart.
S. Rowelnelson, Englehart.
T. S. Woollings, Englehart.
Jas. Tellier, Heaslip.
E. Winlaw, Heaslip.
A. F. Richmond, Englehart.
F. Kiehna, Brentha.
John Allen, Heaslip.
John Short, Marter.
John Neal, Englehart.
Geo. Harman, Heaslip.
H. Shaffner, Brentha.
A. W. Skinner, Englehart.
Jas. Harman, Heaslip.
John Scott, Heaslip.
Geo. Will, Englehart.
W. S. Edwards, Englehart.
John McFarlane, New Liskeard.
Bruce Kerr, New Liskeard.
Jas. Carter, New Liskeard.

OATS.

Competitors who will thresh and keep separate grain from the fields entered in the Standing Field Crop Competitions.—*Continued.*

Geo. Foster, Uno Park.
A. Todd, Murillo.
J. MacDonald, Murillo.
J. W. McArthur, Murillo.
L. Morrow, Murillo.
John Knox, Fenelon Falls.
John Lean, Cameron.
Wm. Gillies, Fenelon Falls.
John Graham, Fenelon Falls.
Wm. Hetherington, Fenelon Falls.
R. Isaac, Fenelon Falls.
Wm. Boyd & Co., Bobcaygeon.
H. R. Seymour, Bobcaygeon.
Geo. Kimble, Bobcaygeon.
Thos. Cosh, Bobcaygeon.
E. Long, Bobcaygeon.
John J. Devitt, Bobcaygeon.
Rose Kimble, Bobcaygeon.

Spring Wheat.

H. Matheson, Richard's Landing.
Geo. Smedley, Richard's Landing.
Rains Bros., Sea Gull.
A. Stableforth, Richard's Landing.
Wm. Lee, Richard's Landing.
Thos. White, Richard's Landing.
John McLeod, Lucknow, R.R. 5.
John McDiarmid, Lucknow, R.R. 6.
Colin Colville, Bowmanville, R.R. 4.
E. E. Patterson, Orono.
H. Jose, Newcastle.
D. Suttan, Millbrook, R.R. 3.
R. E. Osborne, Bowmanville.
J. F. Osborne, Newcastle.
A. W. Annis, Tyrone.
Wm. Webster, Lucknow, R.R. 2.
Chas. Carter, Wingham.
W. J. Currie, Wingham, R.R. 5.
F. Stamper, Bluevale, R.R. 1.
A. M. Fralich, Wingham, R.R. 1.
Geo. Strain, Gore Bay.
Samuel Ewing, Gore Bay.
H. Beck, Foxey.
H. Witty, Foxey.
J. E. Vanmeer, Gore Bay.
Walter Smith, Gore Bay.

Corn.

Samuel Holmes, Northwood, R.R. 3.
Daniel Winters, Northwood, R.R. 3.
Peter Cameron, Thamesville.
P. Secord, Thamesville.
L. D. Hubbell, Thamesville.
H. F. Hetherington, Thamesville.

Potatoes.

W. Schell, Englehart.
Geo. Harman, Heaslip.
R. E. Drummond, Peterborough, R.R. 8.
J. D. Fowler, Peterborough, R.R. 4.
R. J. Walker, Peterborough, R.R. 3.
E. W Wood & Son, Peterborough, R.R. 6.
A. Charbonneau, Alfred.
J. A. Cadieux, Alfred.
A. Langevin, Alfred.
John Robillard, Alfred.
Daniel Charbonneau, Alfred.
M. Leroux, Plantagenet.
A. Doust, Alfred.
E. Dupont, Curran.
Chris. McBride, Emo.
Chas. Fisher, Emo.
A. T. Graham, Cobden.
J. G. McDiarmid, Cobden.
Geo. McDiarmid, Cobden.
Samuel McMillan, Cobden.
Lloyd McBride, Cobden.
Jos. Taylor, Lovering.
J. J. Shields, Waubaushene, R.R. 1.
Jos. Orton.
J. McFarlane, Liskeard, R.R. 1.
Geo. Walsh, Liskeard.
D. MacKay, Liskeard.
Geo. C. Foster, Uno Park.
Jas. Sherman, Thamesville.
Wilfred Smith, Thamesville, R.R. 1.
D. L. McCreary, Wallaceburg.
Fred McCreary, Wallaceburg.
Daniel Coveny, Electric, R.R. 1.
H. Forbes, Tupperville.

STANDING FIELD CROP COMPETITIONS

ONTARIO DEPARTMENT OF AGRICULTURE

1. SCORING FOR YIELD.

The following are the standards of yields per acre adopted at Guelph and Ottawa for the different crops to be judged in Ontario:

Crop.	Bushels per acre.	Number of bushels below standard for each point dropped.
Oats	80	10
Barley	60	10
Corn	80	10
Winter Wheat	40	5
Spring Wheat	35	5
Field Peas	30	5
Beans	40	5
Potatoes	500	25
Mangels	1,200	75
Turnips	1,200	75

2. STANDARD VARIETIES OF GRAIN AND POTATOES.

In order to encourage selection of the best varieties of grain and potatoes, it has been decided that competitors in the Field Crop Competitions should select from the following standard varieties:

Fall Wheat—Dawson's Golden Chaff (White), Imperial Amber (Red).

Spring Wheat—Marquis, Red and White Fife, Wild Goose.

Oats—O.A.C. No. 72. Banner. Abundance. Granary Filler. Mammoth Cluster, Yellow Russian.

Barley—O.A.C. No. 21, Mandscheuri.

Peas—Golden Vine. Canadian Beauty (White Marrowfat), Arthur.

Beans—Pea.

Corn (Dent)—Wisconsin No. 7. White Cap Yellow Dent. Bailey, Golden Glow.

Corn (Flint)—North Dakota, Longfellow, Quebec Yellow.

Potatoes—Green Mountain (Delaware). Carman No. 1. Davies Warrior, Dooley, Irish Cobbler (Extra Early Eureka), Early Ohio, Gold Coin.

This does not prohibit the use of any other variety than those named, but, when the judge is scoring a field, if any other variety than the above named standard ones is grown, two points will be deducted from the total score.

3. WEEDS IN CEREALS.

Class 1.— 1. Wild Oats.
2. Perennial Sow Thistle.
3. Purple Cockle.
4. Wild Tares.
5. Wild Mustard.
6. Hare's Ear Mustard.
7. Ball Mustard.
8. Penny Cress.
9. False Flax.
10. Twitch Grass.
11. Bladder Campion.

All weeds in Class 1 are to be scored quite heavily, and Wild Oats and Perennial Sow Thistle the heaviest of all.

If Wild Oats or Perennial Sow Thistle are found going to seed in the crop the following points should be deducted from the total score: One plant, 3 points: Two plants, 5½ points: Three plants, 7½ points: Four plants, 9 points; and one point for each of the next Six plants, making 15 points cut if as many as Ten

Class 2.—12. Field Bindweed.
13. White Cockle.
14. Curled Dock.
15. Canada Thistle.
16. Chess.
17. Hemp Nettle.

The weeds in Class 2 are to be scored somewhat lighter than those of Class 1.

Class 3.—All other weeds scored somewhat less than those of Class 2.

Note.—Great care should be taken to name on the Score Cards all the weeds of Class 1 and Class 2 which are found in each field. This is very important.

4. POTATOES, MANGELS, TURNIPS AND SUGAR BEETS.

Method of Determining Yield.

Each judge is to take with him an outfit for making the determination, including scales or steelyards. If necessary, a set should be purchased for about $1.00, a receipt obtained for the same and the amount included with the travelling expenses.

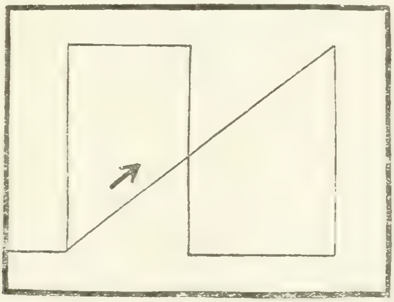
Each judge is to dig and weigh the potatoes in each of two places in every field examined. The following schedule will assist in making each of the determinations:

Inches wide.	Feet long.
26	18
27	16½
30	15
33	13½
36	12
39	11¼
42	10½
45	9¾
48	9

Each lot weighed represents yield of 4 square yards. This divided by 4 is the yield of 1 square yard, which multiplied by 4,840 gives the yield in pounds per acre, and when divided by 60 gives the estimated number of bushels per acre. The two lots worked out in this way, when added and divided by 2, give the estimated yield per acre from which the score can be determined.

5. EVERY JUDGE MUST WALK THROUGH EACH FIELD WHICH HE JUDGES.

The majority of judges favour the following route, supposing the field to be nearly square:



If the field is of a different shape the route should be changed accordingly, so as to ensure the whole field being thoroughly examined.

Ontario Department of Agriculture

FOURTEENTH ANNUAL REPORT

OF THE

Horticultural Societies

FOR THE YEAR

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

Printed by
THE RYERSON PRESS.

To His Honour LIONEL H. CLARKE,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration the report of the Horticultural Societies of Ontario for the year 1919.

Respectfully yours,

MANNING W. DOHERTY,

Minister of Agriculture.

TORONTO, 1920.

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ANNUAL REPORT

OF

The Horticultural Societies of Ontario

1919

To the Honourable Manning W. Doherty, Minister of Agriculture:

SIR,—The report on the work of the Horticultural Societies of Ontario and of the proceedings at the Annual Convention of the Ontario Horticultural Association, held in Toronto on February 5th and 6th, 1920, herewith transmitted, shows in an unmistakable manner the very encouraging progress made by these organizations since they were first separated from the Agricultural Societies in 1906. Starting with a membership of a few hundreds there are now over 20,000 paid members, energetic men and women working for the beautification of the cities, towns, villages and rural municipalities of this Province, and each year sees a large addition to the ranks of these enthusiasts. The improvement visible in so many urban centres, as the result of the work of the Horticultural Societies is simply marvellous and far reaching in its effects, encouraging others in less advanced municipalities to go and do likewise.

A comparison of the Financial Statements of the Societies in this report with those of previous years will give a clear idea of how these organizations are progressing in their beneficent work which is of such great educational value not only to the Societies interested, but also to the whole Province as well.

All of which is respectfully submitted.

Faithfully yours,

J. LOCKIE WILSON,

Superintendent.

OFFICERS, 1920

President	G. H. M. Baker, Lindsay.
First Vice-President	Miss Mary Yates, Port Credit.
Second Vice-President	Rev. W. M. McKay, Weston.
Secretary and Editor	J. Lockie Wilson, Toronto.
Treasurer	C. A. Hesson, St. Catharines.
Hon. Director	Wm. Hartry, Seaforth.

Directors: District No. 1, Rev. A. H. Scott, Perth; District No. 2, H. A. Middleton, Lindsay; District No. 3, Chas. W. Wilson, Fort William; District No. 4, J. S. Wallace, Toronto; District No. 5, W. B. Burgoyne, Toronto; District No. 6, J. A. Magee, Hanover; District No. 7, L. Norman, Galt; District No. 8, Dr. F. E. Bennett, St. Thomas; District No. 9, John Glassford, Chatham.

Auditors: W. J. Evans and W. T. Graham, Toronto.

Representatives to American Civic Association: J. Lockie Wilson, Wm. Hartry, and C. A. Hesson, St. Catharines.

Representatives to Canadian National Exhibition: Frank Roden, Toronto.

Representatives to the Royal Agricultural Winter Fair: G. H. M. Baker, Lindsay; J. H. Ross, Winchester, and T. D. Dockray, Toronto.

Nomenclature Committee: H. J Moore, Niagara Falls; F. E. Buck, Ottawa; P. H. Mitchell, Toronto; Prof. W. T. Macoun, Ottawa; Wm. Hunt, Guelph; O. J. Robb, Vineland Station; Wm. Herrick, Galt; L. C. Crombie, St. Thomas.

TREASURER'S REPORT

STATEMENT OF RECEIPTS AND EXPENDITURES FOR THE YEAR 1918-1919.

Receipts.

Balance on hand as per statement of February 4th, 1919	$436 53
Affiliation fees account, year 1918-1919	69 00
Affiliation fees for year 1919-1920	113 00
Exchange on cheques	0 25
Bank interest to November 30th, 1919	10 69
	$629 47

Expenditures.

Honorarium to Secretary	$50 00
Assistants at Convention	18 00
Mrs. V. A. Scott, account entertainment at evening meetings	10 15
The Bryant Press, letterheads and envelopes	28 15
The Haynes Press, ballot papers	4 50
American Civic Association fee for year 1919	5 17
Dr. F. E. Bennett, allowance as delegate to American Civic Association	25 15
American Civic Association fee for year 1920	5 40
Thomas D. Dockray, allowance as delegate to American Civic Association	25 15
Treasurer's account for postage and war stamps	3 94
Books of receipts forms (2)	0 30
Exchange on affiliation cheques	2 55
Total expenditure	$178 46
Balance on hand	451 01
	$629 47

C. A. Hesson, *Treasurer*.

St. Catharines, February 4th, 1920.

Audited and found to be correct.

W. J. Evans, } *Auditors.*
W. S. Graham }

ONTARIO HORTICULTURAL ASSOCIATION

ANNUAL CONVENTION

The Fourteenth Annual Convention of the Ontario Horticultural Association was held in the Canadian Foresters' Hall, Toronto, on Thursday and Friday, February 5th and 6th, 1920. The attendance was above the average, and the many instructive papers read were listened to with the closest attention by those present.

The President asked that as nearly as possible all papers be confined to fifteen minutes, and that discussion be limited on each individual's part to five minutes, also that no one rise again to speak on the same subject until everyone present in the room had had an opportunity to speak.

PRESIDENT'S ADDRESS.

WM. HARTRY, SEAFORTH.

To-day we meet for our Fourteenth Annual Convention, with delegates from the various local Societies of our Province. In the name of this great Association, which now numbers over twenty thousand members, I extend to you all a hearty welcome and the hope that our meeting and intercourse may be both pleasant and profitable.

When we met a year ago we had great reason to rejoice that our enemy had at last made overtures of peace. An armistice had been signed on that memorable November the eleventh, nineteen hundred and eighteen, when the silence of "no hostilities" dawned upon our boys.

Since then, many of our brave men, the best soldiers of the great war, have returned, but alas! not all of them. Some of the bravest and best have not returned, and long may their blessed memory continue with us. Yet, while peace has been signed, we regret to say that our neighbors to the south, our former allies, are still at war with Germany.

Peace has been declared but the awful results of war are with us in the cry of starving women and children in Europe and Asia. Is it not our plain duty to continue the work of greater production wherever even a bushel of potatoes, or a peck of corn, or vegetables of any kind can be grown to supply our own needs and provide a surplus to send to these starving millions. May our efforts in this line continue until the wail of the wretched, starving, homeless women and children is heard no more. And may it please heaven that before we meet again all these fruits of war as well as the actual conflict may be forever silenced.

Some of you before me may be with us for the first time, as the success of our Societies, particularly in regard to increased membership, has far surpassed our expectation. Permit me to congratulate the Societies on their success in this work. Important matters will be brought to your attention during the Convention which will demand your earnest consideration, and you will be expected to pass upon them.

Complaint has been made to me with reference to the mutilation of our shade trees, not only on the public highways, but on private property as well. It surely is high time that something should be done to prevent the destruction of our beautiful maples.

Do we get the best out of our work when we plant seeds in our garden and produce great crops of vegetables; when we plant trees and gather their fruits; when we make fine lawns with flowers and shrubs and shade trees; when we have a beautiful flower garden in all its various forms and floral designs or when we induce others to beautify their own homes?

If when we, with chisel, saw and twig, have grafted a good fruit on a tree bearing poor fruit, then we watch it from year to year until one fine May morning to our delight we find the twig, now a branch, is in bloom. Later we see the fruit set.

If with gentle hand we transfer the pollen from one gladiolus to another, and then protect it, the seed ripens. Then comes the spring planting and watching for the tiny shoot. Next comes the searching out of the tiny bulb and repeating this process from year to year. Now our bulb is strong enough to flower and we see the flower stem coming up.

These are all wonderful things. But later we visit our fruit tree. Now the luscious fruit is ready to pick and as we stand looking at it we ask ourselves, "Who gave us the knowledge? Who gave us the vision?"

But again we turn to our Gladiolus. The sun is just peeping over the horizon in the east. The two first flowers are fully expanded. We stoop to examine it in all its beauty of color, form and arrangement and we exclaim, "What is man that thou are mindful of him?" With our flower in hand, we return to our family to share our joy with them.

And now we fully understand what it means to be a co-worker with the Author of all noble things, and we realize that it is only thus that we are getting the most out of our work.

And yet, this is not all. When we have done all this, are we not only obeying the divine command to till and to take care of the earth and subdue it?

And what of the result on ourselves? Do we not subdue our less fine natures and mold and soften our better instincts on that one great pattern, thus receiving for ourselves the greatest amount of good from our work.

REPORT OF SUPERINTENDENT.

J. Lockie Wilson.

In compliance with a resolution passed at our last annual Convention, the Act respecting Horticultural Societies was amended by the Legislature and this change made it necessary to alter the date of our annual Convention from November to February. This, I think, is a move in the right direction as it brings us nearer the spring time when the real work of gardening begins.

We now meet for the first time under the new regulation, which provides that the annual meetings of our Societies must be held on a date between the ninth and fifteenth days of January, inclusive. This change gives our Societies an opportunity which they did not have in the past of completing their work up to the end of the calendar year. Another amendment changes the date on which new Societies can be formed from the 8th to 14th of January to the same dates in April. A change in the method of electing directors to the Boards of Societies was also made. Of the ten directors five are to be elected for two years and five for one year during 1920, and thereafter, five annually for two years. In cities, having a population of 200,000 and over, three Horticultural Societies can be organized instead of two as formerly. Societies in order to qualify for their grants will now be required to send their returns to me not later than March 1st.

I am pleased to report that the Horticultural Societies of Ontario are continuing to do splendid work for the beautification of home, public and school grounds. When I was given charge of my Branch of the Department 12 years ago there were but a few struggling Societies with an exceedingly small membership. To-day it is pleasing to state that we now have a hundred active Societies with a paid membership of over 20,000. This must be, indeed, gratifying to you, ladies and gentlemen, who have taken such an active part and to whom belongs in a large measure the credit of the splendid work that has been done. We must not remain satisfied however, but set our standard higher as the years go by so that we leave behind us a record of work well done. Under the terms of the amended Act, Horticultural Societies can now be organized in rural municipalities while the work before was confined to cities, towns and villages with a population of not less than 500.

G. H. M. Baker, President.

Ten new Societies were organized in 1919, the largest number in any one year since Horticultural Societies were separated from Agricultural. Already there are ten applications for the establishing of new Societies in 1920 and over two months yet remain during which organization can be completed.

At the last Convention Mr. W. J. Evans gave notice of motion that if five or more Horticultural Societies were represented at a Convention from any one district the representatives of these five Societies might convene and among themselves elect their district director at the Convention. This seems a reasonable proposition and might well receive your favorable consideration.

In printing the Constitution in the last Report an error was made in section 1: in lines 4 and 5 the words "up to 500 members, the maximum fee to be $5.00" should have been left out. This means that each Society would pay an affiliation fee of $1.00 for each hundred members with no limit as to the maximum fee.

Notice of motion has been given by Mr. W. B. Burgoyne that at this Convention the maximum annual affiliation fee be $10.00 regardless of the number over 1,000.

I am pleased to note a marked improvement in the payment by the Societies of the affiliation fees to this Association. There is no reason why the small fee should not be paid by every Society in the Province. The value of this Central Association to all the Horticultural Societies has been proved time and again by the increased Legislative grants and the amendments to the Act regulating Societies through the representation of this Association to the Government.

For many years we were favored by the presence at our Convention of the late W. F. Ross, Picton, whose passing we all deeply mourn. As a Director of our Association he did his part ably and well. He was an expert grower of tropical plants and in this line of work he added much that will continue to be useful as well as beautiful in the years that are to come.

A movement is on foot to acquire a plot of ground to be utilized in Horticultural experimental work and trial grounds in some central location in Ontario and I am sure that in this work we shall have the hearty co-operation of both the Federal and Provincial Governments, and with the assistance of Mr. Macoun, Dominion Horticulturist, success will crown our efforts in this regard. The proposition will be further discussed at this Convention.

As you are all aware, our organization is affiliated with the American Civic Association, which held its meeting in Philadelphia in October. This Society is doing similar work to what we are doing here along the lines of Civic Improvement and a report of the proceedings of this Convention will be given you by Messrs. Dockray and Bennett who were two of your accredited delegates. The American Civic Association receives no Federal or State aid and their work is to a certain extent crippled. They depend entirely on membership fees and donations from private individuals interested and a full report of their Convention is not published as is the case with our Association. Their intention is, however, to take a leaf out of our book and apply for State and Federal aid to assist them to further the work in which they are engaged.

Dr. Scott: In the absence of Mr. Burgoyne, who was to have led us in the discussion of the Secretary's paper, I have great pleasure in saying that in my judgment we are starting out in the nicest sort of a way to-day through the optimistic, hopeful report that comes to us from our esteemed secretary. Twenty thousand of a membership, 10 new Societies in 1919, 10 prospective Societies at least for 1920, a new government, to say nothing of the excellencies of the previous governments, and a cause that is one of the most beautiful that can engage the attention of thoughtful and ambitious Canadians.

HOW WE INCREASED OUR MEMBERSHIP.

REV. W. H. MCKAY, WESTON.

We had a good campaign in Weston, the results were good, and I have been asked to say how it was done.

From a membership of 150 in 1917, through a membership of 450 in 1918, to a membership in 1919 of 1,741, is, as the boys would say, going some. Impossible says the incredulous one, in a town of only 2,300 men, women and children. How was it done, enquires the red hot horticulturist? And I shall attempt to answer.

To the Membership Committee of three the time seemed opportune for a forward movement. The campaign spirit of the war had not yet spent itself. The note of the heroic had not yet died out in the heart of the people. It was still sounding, and human nature loves a campaign. The campaign note was three-fold, and might have found expression in the revised version of a well known slogan, "Stop, Look, Loosen!" Our course of action was along this line. Let me explain.

The Committee stopped to deliberate, and its deliberations were concerned with the field, naturally, and a careful survey of its scope and possibilities. Geographically, the Committee decided that our field should be limited only by the skyline, and anyone from one month old to ninety years young who could be interested in the work of the Weston Horticultural Society to the extent of one dollar should be a member thereof.

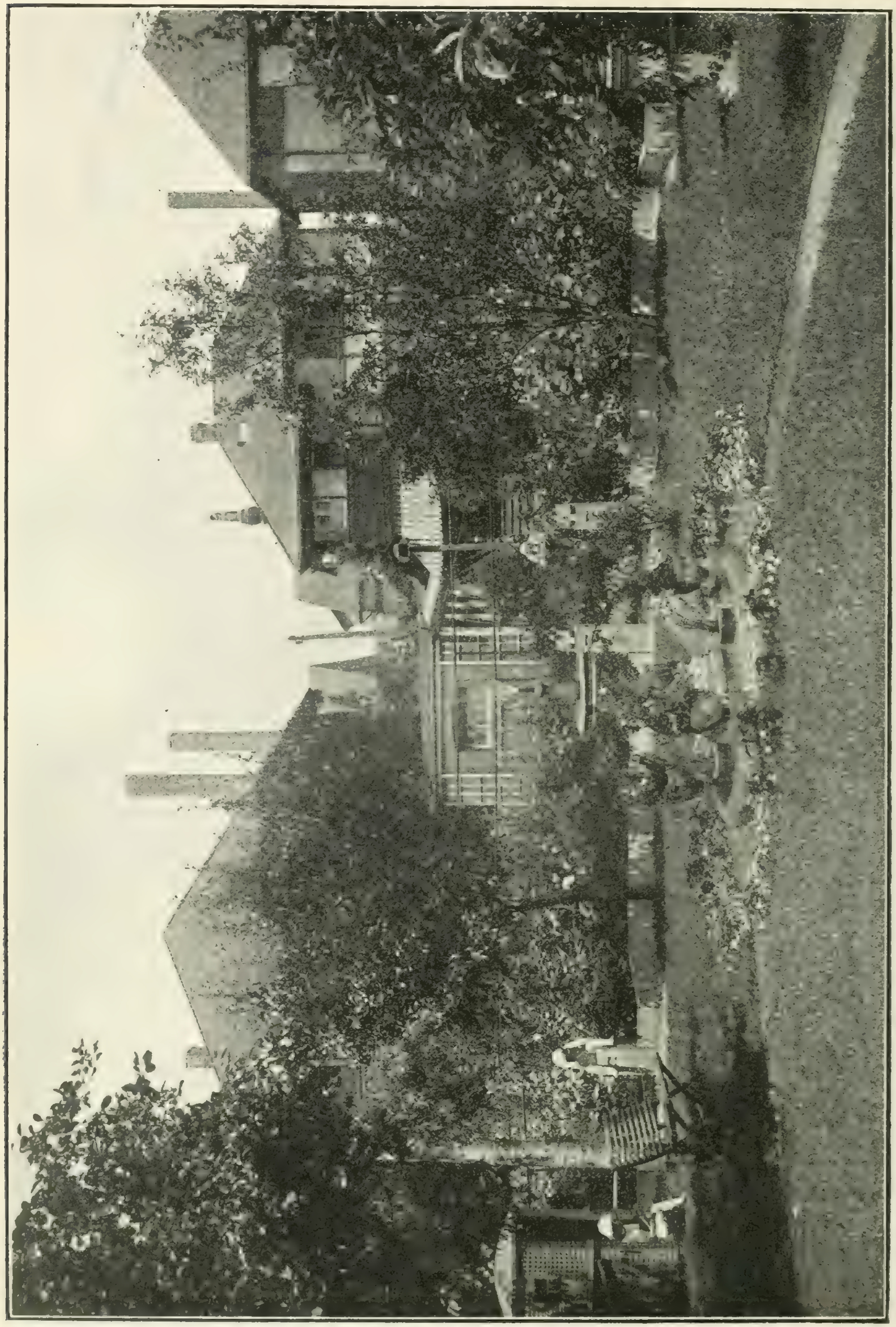
The next question the Committee was interested in was, what had it to offer? One thing put on the market was the past record of the Society, which had been almost entirely the dynamic power underneath the Organization of Resources Committee during the war. Its pillars predominated among the pillars in the Red Cross, the Patriotic Society, and the Victory Loan campaigns. The policy of Juvenile Gardeners also appealed to the imagination of the people. Another commodity was the offering of an opportunity for the expression of gratitude to our returned men, to the motherland, and especially to our honored dead. Two patriotic options were put on the market. The one was for helping to replant with orchards the devastated areas of France and Belgium. Four hundred and fifty memberships came in on this kind of option. The other was the planting of memorial trees for the heroes who had fallen in the war. Five hundred memberships came in on that sort of option.

The campaign risked its life on this commodity. This was their trump card, and we looked for big business.

Of course it seemed to the Committee advisable under present conditions to offer also a bargain counter, laden with options recognizing at the same time that the offering of options is but a means to an end and should be a diminishing quantity.

Lastly, the Committee placed on the market its plans for the future which aimed at a well defined policy regarding civic improvement. This had to do with our river, our streets and boulevards, our parks, our factories and our railways and depots, and also our public buildings. They were the products that we placed on the market.

The second note is to be found in the second word of our slogan, Look! Our Committee had faith in its cause and its second task was to give to the public the vision which it had itself. To this end eight beautiful prizes were placed in a prominent store window, the rewards for eight aggressive and popular young ladies



Suburban Garden at its Best.

who were chosen to act as captains in an eight days' whirlwind campaign. These prizes were gladly donated by prominent business men of the town. Each lady was given a committee of four—two gentlemen and two ladies—and each team was given a day to perfect its plans. This having been done all the teams with their workers met in the town hall when final instructions for the details of the campaign were given, followed by an address by an experienced business man on the subject of salesmanship.

Returns were to be recorded every second night—five credits being given for each membership reported on the first recording night, four on the second, three on the third, and two on the fourth, and so although it was ten o'clock at night when the race began, the storm broke and swept everything before it.

By the time the third note was sounding the people found it necessary to loosen. Many a citizen found it necessary to rise early in the morning to answer the doorbell. Merchants had to give precedence to the campaign visitor. Milk drivers, bread drivers and coal drivers were waylaid and induced to loosen, and these were not the only ones who set out from Jerusalem to go down to Jericho. The storm had broken. The atmosphere was prepared for a great drive. Trolley cars were held up, places of business were marking time, and factorymen were enjoying a well earned recess. The mail order department also brought magnificent results.

When the storm abated, the wind ceased, and there was a great calm, and many surprises. Whole classes of school children found themselves members of the Weston Horticultural Society. Members of Parliament at Ottawa and Toronto found certificates of membership on their desk on their return to the day's session of the houses. President Wilson, David Lloyd George, Papa Joffre, King Albert of Belgium, Sir Douglas Haig, and King George found memberships waiting on their breakfast plates, and altogether 1,741 fully paid up members were reported.

The last feature of the campaign was a complimentary banquet tendered by the Directors of the Horticultural Society to the eight lady captains, all of whom acquitted themselves most gloriously. More than one hundred guests were present, and in the course of the evening the prizes were presented by Mr. Roadhouse, the Deputy Minister of Agriculture for Ontario. Other prominent horticulturists present included Past President and present honorary director, Dockray, and Miss Blacklock. The Town Council and Board of Education were officially represented, and a magnificent opportunity was given to emphasize the aims and ideals of the Society. The whole town felt that a great piece of valuable work had been accomplished.

There were many striking features of the campaign. The good natured rivalry, the almost ungovernable activity of the captains and their teams from start to finish, the backing of the citizens generally, strikingly exemplified. But the thing which towered high above all others, the thing which caught the imagination of the great majority of the people, the thing which reflected the highest degree of delight and satisfaction was the popularity of the patriotic options. The campaign appealed to the heroic in man for big business, and naturally won a magnificent triumph.

JOHN GLASSFORD: I have been considering for some time that some strict measures should be taken, placing us in a position to carry out the slogan of the Ontario Association, "For a more beautiful Ontario."

In order to carry out any special plan of work, it will be necessary to have legislation. One has but to look at the remnants of the attempts at beautifying the streets of any city or town in the Province to be perfectly certain of the lamentable failure that has been made by trusting to individual enterprise.

We have in Toronto many public spirited citizens who spend large sums of money and time to enhance the beauty of their homes and the street whereon they reside. Then we have other citizens who care for none of these things excepting the rise in the value of their property through their neighbor's improvements.

These are the citizens we wish to get after. And there is no way of getting after them excepting through legislation.

As an idea of my meaning, I refer to an Act recently passed by the Nova Scotia Legislature; also an Act by the State of Pennsylvania. I believe that now is an opportune time, seeing we have a new Government that may wish to do something worth while.

Excellent Boulevard Treatment.

I therefore move that a Committee be appointed from this Association to consider carefully the question of the necessary legislation to compel citizens to care for their boulevards and streets properly; to determine whether this legislation should be provincial or municipal; and if it is deemed advisable to secure provincial legislation, to draft a petition to the Government setting forth the requirements of a suitable Bill; and that copies of this petition be sent to every Horticultural Society in the Province for signatures. And further, so that the members of Parliament in every county in the Province may be fully conversant with the wishes of the Association, that the petition be presented to the Legislature at the coming session.

Mr. Baker, in seconding this resolution, said: This brings us to a point where we can do some good. In the town of Lindsay we have several nice streets and the boulevards are nicely kept up on some of the lots. On others on the same street we have burdocks and thistles growing. We go to the owner of the property, and ask them to get this unsightly mass cut, but usually find we can do nothing. The resolution of Mr. Glassford will help along that line in the way of compelling property owners to keep their boulevards in shape.

Wm. Hartry: There is a law in the Province of Ontario by which a man can be compelled to keep his burdocks and thistles cut. We had a case in our town, where the owner did not accede to our request to have the cutting done, and we put a man in to do it and charged it on the owner's rates.

A motion for the appointment of a Committee to consider this matter was then put to the meeting and was carried, and the following were appointed members: Messrs. Glassford, Baker, Buck, McKay, Evans, Saunders, and Dockray.

Dr. Bennett moved a vote of appreciation to the Weston Society for its splendid efforts and still better results. Seconded by Rev. Mr. Scott, and carried.

HORTICULTURAL EDUCATION.

W. E. Groves, Hamilton.

My subject may at first sight appear to be somewhat ill chosen, seeing that this convention is the essence of a movement that is educational through and through. If there is one work that, more than all others, has contributed to a greater love for, and interest in horticulture, it is the work done by the societies represented here to-day. I want to be quite clear on the point that I am not here to talk to this audience about education applied to its own branch of horticulture, but thanks to the kindly invitation given me, I am here to make a frank appeal for a wider, larger training ground, for the would-be gardeners of this great Dominion. And whilst I can say in perfect sincerity, that I am not assuming the role of critic as to what has been done, and is being done by the departments, I feel equally sure that no apology is needed for my subject.

For good or ill the horrible years of war left human society, commercial relationships, and national institutions, stirred to almost fathomless depths. More than at any time in history, is the word reconstruction on the lips of thoughtful men and women, and if reconstruction is wise or necessary in other directions, need we feel alarmed or disturbed if the twentieth century horticulturist asks to be heard. So it is for this man I appeal, the man who sometimes digs up your furnace at this time of the year, and serves your perennials in the same way in the spring, the man who cuts your grass, and delights sometimes to use the lawn shears on your choicest garden subjects; the man who prunes your early flowering shrubs in April and your late flowering varieties in July; probably the most abused and certainly one of the worst paid men in the country. I know him; he is perhaps all I have said and more. He is probably no worse than the fellow who sands the sugar, waters the milk, or sells you eggs that first saw the light of day in some other year than that in which you bought them, and knowing all his weaknesses I am proud to stand here in his defense to-day, and boldly ask for him a new opportunity, a new outlook, and perhaps a new sympathy.

If horticulture is to develop in this country as it deserves, there appears to be need for some definite action to really teach it. There is lacking here that system of apprenticeship which obtains in some of the older European countries, in consequence of which other methods have to be followed. At least two grades of workers stand in need of some real educational provision. First, and perhaps the most urgent, there is that class of man who is aiming high and who has his vision turned towards a lofty level in his profession—the man who wants to get teaching.

and experience that will equip him for almost any position, either in private or commercial horticulture. I am taking no risks in the statement that up to the present this man has been imported, and has not been a product of the country. True, he has had to adapt his knowledge to new conditions of atmosphere and climate, but he learned the fundamentals somewhere else, generally on the other side of the Atlantic. For the present this source of supply is dried up. The wide-awake man is now emigrating, rather than immigrating. We felt a little here ot the devastation of the war, but it was in the old country where the shoe really pinched, with the result that stocks of nearly all kinds are so low, skilled help—decimated so badly during the war—is now so short, that many of the better class workers are returning, and certainly the supply of men from this source will be stopped for some time. From inside knowledge I have no hesitation in saying that really first class gardeners are as scarce here to-day as at any time for a generation.

Then there is the very ordinary unskilled, or partially skilled man, the one whose ambition, or opportunity, does not touch the high levels, but who by reason of his integrity, his capacity for work, and his love for the profession, constitutes the large percentage of present day garden workers. This man has immigrated, chiefly to better his conditions, and has always to keep the thought of daily bread so much uppermost, that any improvement in knowledge has to be secured more by chance than by system. In directions which I will indicate later there seems to be need for helping both these workers, and for them both I ask your goodwill.

A second reason for some new educational movement can be found in the fact that Canada may probably be thrown more upon her own resources in the coming years. It has been the rule rather than the exception to produce what can be grown with little difficulty and expense, and to import the balance. It has been possible to bring in more cheaply than we were able to grow, and, partly because this plan was easy, partly because it meant dollars and cents, we followed the line of least resistance. It is now beginning to be manifest that this cannot go on forever. Prices "over there" are getting prohibitive, supply is not unlimited, and Canada being now practically the only purchaser of nursery stock on this continent does not provide for the European countries a market large enough to warrant the same commercial relations as formerly. The fact that for the present nursery stock cannot find entry into the U. S. A. will for a time make importations from that country small. The home market claims the products, though in time this may to a large extent right itself. At the present time stocks in this country are in some lines very low, some fruits being positively unprocurable. It may be new information to some present to know that in the year June, 1913, to June, 1914, nearly five million plants were imported into Canada, from which date there was yearly a decrease until the year 1918-19, the total then being 850,000, or less than twenty per cent. of the total in the year previously named. May I add that there has been no serious attempt to replace by home production the shortage thus shown.

I would not be fair to my subject did I not say that in the future there may be reasons entomological for the compelling of home production. The present system of inspection and fumigation is satisfactory and efficient. The department is conducted in a gentlemanly manner by Dr. Hewitt, with a full sense of his responsibility, both to the country and to the industry. There are none of the thoughtless, rough-shod methods of the F.H.B. at Washington, but rather a real co-operation of grower, importer and department. But if the time came when for pathological reasons some restrictions had to be enforced, just where would we be?

One more reason why it is necessary to turn our attention to production, is the present serious condition of exchange. I am willing to learn my economies at the feet of men like the managers of our great banking institutions, who with one voice say that the condition will not adjust itself until exports more nearly equal imports, or in other words until we produce a great deal of the material for which we are now content to pay some other country. It may yet become a patriotic duty to practice some self-denial in this connection.

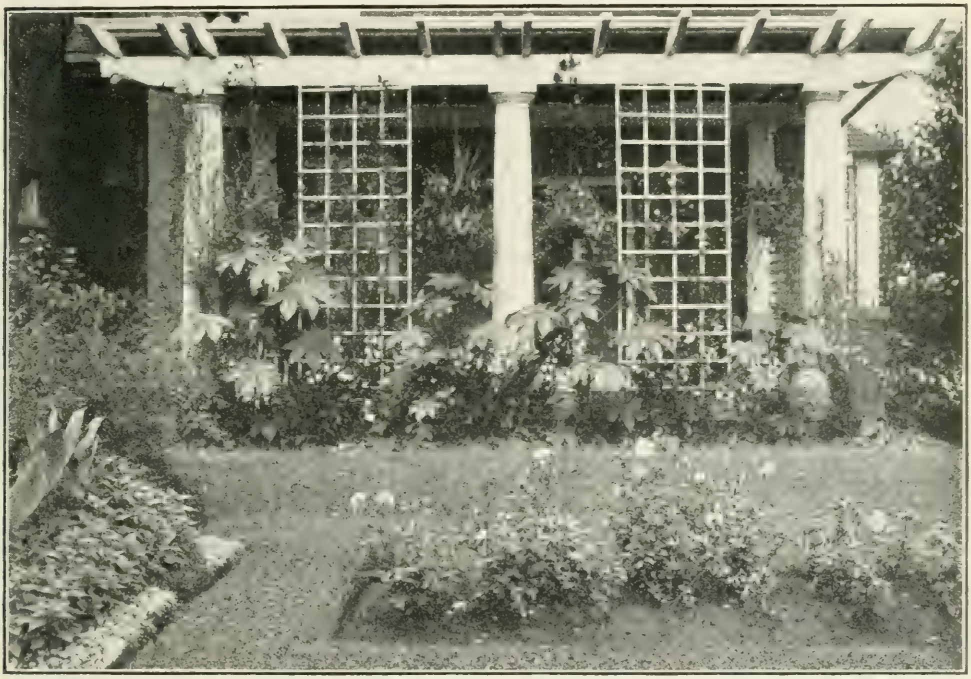
Where art imitates nature.

This leads up to the point I want to establish, that the one place more than all others where we should fall down, is the skilled labor difficulty. Quite recently a leading writer on things horticultural in the U. S. A. asked, "Where are we going to get the patience, skill and experience to grow stocks in this country?" He probably asked the question in a panic, but it may well be asked here in serious reality, for the shortage is really a problem to be faced, and the demand is rather likely to increase than otherwise. The failure of the apprenticeship system and the tardy development of our vocational institutions are perhaps responsible.

What are the remedies? It is not my purpose to present a scheme worked out in detail, though I do hope to make some suggestions as to what might be considered with a view to improvement. A kindred organization of which I am a modest official felt the situation to be so urgent that at a convention in this city last August, it appointed a committee to consider and deal with the matter as it thought best. This body quickly overgrew its original composition, and if there were time to give you the names, you would agree that as at present constituted, it is a body of some importance. It has carefully and sympathetically considered the matter in many of its aspects, reaching the stage of adopting a resolution as a basis for further discussion. We have tried to face the conditions squarely, and whilst some of our ideas may for a time exist only in dreamland, we have some that could, and should, come within the range of practicability. Still having in mind the two classes of workers indicated at an earlier stage in this paper, there is no doubt that for the production of experts, a real college education in a real horticultural college is essential. I have no right to utter one word (nor do I) in disparagement of the present college work. The training there has of necessity been agricultural rather than horticultural, and neither by situation or equipment can these institutions as at present constituted begin to do the almost equally important work with which I am dealing. A friendly critic recently wrote me suggesting that at least fruit and vegetable culture were receiving serious attention from the departments, but in a following sentence my friend added "the facilities afforded at the various institutions are not adequate to the needs of the country, and are largely handicapped by lack of funds to carry on the necessary work, and by lack of numbers of well trained men to cover the field in Canada." These are not my words, but come from one of the leading college professors in the country. I take my stand on the statement, and suggest that no real educational work will be done until horticulture is separated from agriculture, and in some way have for its work, its own sites, allocation, and equipment. The aspiring student who can afford it needs real college atmosphere and training. Incidentally may I enquire why the aspiring student who cannot afford it should be shut out? But what is the present situation? The educational home of the best men we have, has been, or is, Illinois, Cornell, Kew, or some similar institution, and we say that a country so rich in resource as this great Dominion, could with the slightest effort find a remedy. I know what I venture when I say that the college with which this Province is most familiar (the O. A. C. at Guelph) has a plant and equipment for supposedly horticultural training that would be farcical, did it not deserve a stronger word. Its professors and teachers are men to respect and honor, but until something far more advanced and definite is done in the way of real provision, conditions can hardly improve. Horticulture being a distinct branch of agriculture, should, I submit, have a distinct, separate equipment, at a point or points where access is not difficult, where conditions are suitable, and where real development is possible. At present it is without these advantages.

Among other developments suggested are the establishment of national organizations covering every branch of horticulture, and out of which a central body could be formed: the freer establishment of arboretums, of which there are already some in existence. The provision of botanic gardens, originating possibly in a botanic society, would be a grand step forward. Is it too visionary to look for a time when every well kept town will have its public park or parks, constituting public breathing spaces, public playgrounds, public resting grounds, and so planted, and classified, that they would be real public schools? Is it possible to tabulate the national value of such a provision? Might it be practicable one day for the gardeners, florists and horticultural societies to secure at the national expense lecture courses in their own district during some season of every year, regular home training spots, where perhaps experts may not bloom like flowers in May, but where the average man I tried to describe early in my paper could get an uplift and an encouragement. Correspondence schools are all right up to a point, even though they originate in some other country, but they do lack that personal touch, that intimate association, which is after all of great educational value. Some of these things might be done in the name of national education, and right here in our schools, but I am sure I can get agreement in the statement that they need doing.

I refrain from following the argument that I may occupy my little remaining time with the definite work of the committee I am glad to represent here to-day. Under the sympathetic and capable chairmanship of Mr. W. W. Gammage of London it has reached a stage in its work covered by this resolution:



Graceful Pergola Effect. Rose Bed in Foreground.

"Whereas, a well-developed Horticulture is recognized as essential to the welfare and prosperity of Canadian home life, and

"Whereas, 'Horticulture is a definite craft in itself and is not a branch or Department of Agriculture, and consists of the more intensive cultivation of fruits, flowers, vegetables and ornamental plants,' and

"Whereas, there is a great shortage in Canada of trained Horticulturists, and

"Whereas, Scientific Research in Plant Physiology, Plant Pathology and Entomology is of vital importance to the future development of Horticulture in Canada, and

"Whereas, Systematic Plant Improvement and Plant Introduction are likewise of fundamental importance to the future of Canadian Horticulture;

"Therefore, be it resolved that this committee recommends the establishment of special facilities for the practical and scientific training of men in Horticulture, and further recommends that all Horticultural and kindred organizations in Canada be requested to appoint representatives to a Canadian Council of Horticulture with a view to formulating plans for the adequate development of horticultural interests in Canada as outlined herein."

A Canadian Council appeals to us as a real working body that would be recognized by the departments, at least in an advisory capacity. The idea is to have upon it representatives of every branch of horticulture, and while not making it cumbersome, it should be large enough to be really responsible. A body such as this could form an avenue of approach to both Federal and Provincial Governments when necessary, and would command a respectful hearing. The Canadian Horticultural Association, through its Educational Committee, both of which I have the honor to represent here to-day, have placed on record the resolution as a real statement of policy. We are not in the least dogmatic about details, but realizing the situation, we are out to get something done, and something that shall be of the greatest good to the greatest number, hence the appeal for your interest, support, and co-operation. We already have behind us a large number of horticultural organizations, as well as the keen interest of a number of our leading educationalists. We have also gained the ear of the Provincial Minister of Agriculture and the sympathy of the Federal Department. Because of this, and realizing the justice of our request, we are going on, but we do want to gather in every possible interest and every possible assistance.

The man who makes two blades of grass grow where one grew before, the man who spends his years tilling the soil to produce food for his fellow men, the man filling up his life making the countryside or the town lot lovelier places in which to live, the man who in the laboratory, or the field, is working to develop production and intensify beauty, is not only doing a work absolutely essential to the welfare and prosperity of Canadian home life, but he is doing work that, with the possible exception of preaching the gospel and healing the sick, is perhaps the most God-given, God-blessed work on earth. And with no hesitation I ask for this man that in this new age of building up, this new era of re-establishment, he should not only have a right to be heard, but that his occupation, which is at once both an art and a science, shall receive what we believe is its just recognition.

PROF. MACOUN: I was very much interested in Mr. Groves' paper, because I agree with him that the time is coming when it is going to be practically impossible to get trained gardeners in Canada, unless something is done to change present conditions. I have men at the Experimental Farm in Ottawa, who have been engaged in the Horticultural Department for twenty-five and thirty years, and yet those men who were trained gardeners in the Old Country, are getting less than $1,200 a year, and they would not stay at the Experimental Farm except that they have spent a large part of their lives there and are not in a position to go elsewhere. Now it seems that what this Association and others have got to do is to show the Government of Canada that a horticulturist or a trained gardener is just as well a trained man or a better trained man than a plumber, a carpenter or any other trained man. At the present time the carpenters are asking $1 per hour and the plumbers $1 to $1.50 an hour. Now I venture to say that a gardener is a more highly trained man than a plumber or a carpenter. He has got to have a wider training. And before we can do anything to improve the condition of the gardeners of this country, we have got to show the authorities that the trained gardener deserves and should have twice as much money as he is getting to-day.

In the new classification of the Dominion Government, they are put down with a minimum salary of $960 a year; the greatest possible salary they can get is $1,200 a year. A head gardener is put down at from $1,200 to $1,500 a year, that is to say, that if I want to get the highest trained gardener that is available, I can not offer him more than $1,200 a year. Now what kind of help can you expect to-day for $1,200 a year? A man to do the work that he is expected to do at the Experimental Farm or the O. A. C. should have been well grounded in the principles of horticulture, so that he can attack any problem that confronts him, and it seems to me that this Association can do a great deal by bringing to the attention of the Government the fact that a man has to be well trained to be a good gardener, and that he should be well paid for that. Now in any discussion, there could be something drawn up to show the education necessary and the skill that a gardener must have in order to do his work well, and once we get the Government of this country thoroughly familiar with the qualifications necessary in a gardener, then I think we will be able to attack the larger problem of educational facilities for gardeners, for at the present time who is going to become a gardener, unless he is going to be educated to start in business?

Wm. Hunt: I regret very much there is no better representative than myself here from the O. A. C. to speak on this question. Most of you are aware, of course, that I have been closely connected with Horticulture in Ontario, for nearly fifty years, and I have watched the progress of our Societies and of this organization especially, and also the professional side of the question which has been so ably represented to-day by Mr. Groves. I was delighted with his paper, and I am glad to say that the professional element of the Canadian Horticultural Association has joined hands with you in this great question of men fitted to take their place and help make our country more beautiful. It is a big subject, and I think the paper was a splendid one, and I hope this organization will take some steps in this matter to assist this committee that has been appointed by the Canadian Horticultural Association. There is no need to discuss the first part of his paper as to the necessity of having good men through our country now that the source of supply has to a great extent been cut off, that is, the trained element that we have been getting for a number of years from the Old Land will be very limited for a long time if not almost entirely cut off. And it behooves us to try to supply that want.

As the representative of one of our educational institutions, I have taken a prominent part, particularly, in the Floricultural phase of the question at the O. A. C. for a number of years. I have long seen the necessity of something of this sort. Take your own organization for instance. I used to go around to the Agricultural Fairs judging, at the time when we were a sort of small auxiliary to the Agricultural Society. We made no headway until we broke away from the agricultural side. I don't wish to disparage them. Naturally they stood first as an Agricultural Society and they got their grant as such, but the horticultural question was necessarily put in the shade. What has happened since? We have broken away from the Agricultural Societies and have a grant of our own. I have only to appeal to the secretary, his facts and figures show that our Societies were never doing the work we have been doing lately. But we cannot carry this work on by talking here. We want absolutely practical men to do the work throughout the country. The source of supply is wanting, and I feel that our educational institutions along that line are not producing the element for that work. Our training is insufficient for that, and I am glad to see that this step has been taken, and I hope some good will come of it, that something may be done along this line, and I hope that this Association will appoint a good strong committee to join with the Canadian Horticultural Association in this matter. We are endeavoring, as far as the Ontario Agricultural College is concerned, to do the best we can. Only yesterday I took our graduating class in Horticulture through some of the main horticultural—both commercial and private—establishments of this city. We spent all day until evening in three or four places, mainly in Millers. Sir Henry Pellatt's and Sir John Eaton's. What our boys saw there was a revelation to them.

We do not realize what these institutions mean. We should have these things right at our doors where we are teaching these young men and should be able to equip them. But as long as we are so closely connected with agriculture, we can do nothing. I don't expect to be as active in Horticultural matters as I have been in the last twenty-five or thirty years, but I am proud to see this day, when what I have been waiting for for a number of years, to get the active co-operation of the professional element in this work, has come to pass. I trust that there will be a committee appointed on this matter, and that they may be able to carry through something that will result in good.

Entrance to "Old Oaks," Mississauga Road. A Returned Soldier's Farm.

REV. DR. SCOTT: I would like to compliment the author of the last paper read upon the live thought that marks that paper, upon the points that are contained in it. And to lay particular stress upon one portion of that which says that next to the gospel of the grace of God for men and women, in our Canadian land, there comes the gospel of horticulture. I think that point is well taken. Where the soil is the basic industry of this, perhaps the most promising country under the sun, I think the time has come when we Canadians and when we in the banner Province of Ontario, should put some machinery into play to carry out the idea that is set forth in that paper. I would like to call the attention of the members of the Association to-day to the fact that a few years ago this Association, through a committee, of which I was a humble member, approached the Government of the day with a view to the incorporation into the school books of this Province of certain articles or pages bearing upon Horticulture. The Government of the day saw the reasonableness of that and gave us certain assurances that in course of time our ideas would be dealt with. The time has now come when we should resolutely seek to carry out the idea that is contained in this paper and call the attention of the Government to-day to the assurance of its predecessors, and seek to have this idea that is set before us so forcibly and so beautifully in the paper just read, carried into effect.

A. Gilchrist: If I were to start life over again I should be a gardener. Gardening is my specialty, my business, my living. We work from daylight to dark, and that is our pleasure. My business for thirty years has been to grow stuff like you see there (pointing to decorative and flowering plants which adorned the stage), and I know a great deal about them. If I was to try to hire a man to-day to grow that class of goods I question whether I could get him. They are not to be found. I have employed all kinds of men in thirty years—ministers, doctors, lawyers and professors. The last was a Cambridge man.

A good gardener is not to be found to-day. We must have men who have been taught the theory as well as how to work. They must know how to raise, sow and plant, and do it quickly. If you want a school where you teach practical gardening and also the theory of gardening, there is an immense opportunity in Canada for growing all classes of nursery stocks. We are depending upon Holland and other countries to produce inferior stock to what we can produce in this country. America has prohibited a great variety of goods from coming into their country, and there will be a great scarcity. The price of Gladioli alone has increased $10 since January. Why do not we grow our own roses? I was told at the market the other day by a man who has always succeeded in producing good climbing roses as early as Easter, while others failed, that he grew his own stock while others got theirs from Holland. The reason is the climate of Holland is not suitable for producing the variety suited to our climate here. The day has come when we must grow our own stock.

Dr. Bennett, St. Thomas: In respect to raising the plane of Horticulture in our municipalities, we have been able to obtain an outside man, a Welshman. He is going to be at the disposal of our Society at an expense of $1,800. It seems to me if the larger societies could employ a man like that, it would have a splendid influence on beautifying our cities.

Wm. Hartry: It was my privilege last year to visit the Horticultural Section of the College at Guelph, and I had the pleasure of hearing my good friend, Mr. Hunt, and when I saw the room that the lecture was delivered in that day, I was really surprised that there were not better conditions. Then when we went out into the greenhouse where the experiments were carried on, I thought still that there might be a great improvement. My own experience in the matter was limited, but it seemed to me, that there was not sufficient equipment, and that they did not seem to get the worth that should be gotten out of it, and it is for want of equipment. I know Mr. Hunt and his associates have been working hard, and that they are capable men, but I do not think the conditions are favorable.

I have done a little importing of stuff from Holland and I know what Mr. Gilchrist means. While we get bulbs there to very good satisfaction, a great deal of their other stock by way of roses, are not as good as we can grow in Canada. I have some roses that I grow myself, particularly climbers, and they seem to be stronger and do better than any imported stock.

T. D. DOCKRAY, Toronto: There is a suggestion in what has been said as to the opportunity for us in Ontario to produce commercial flowers, roots of plants, etc. I would like to instance one thing that occurred at the great American Pæony Society's Show at Detroit. There were 500 varieties of pæonies shown there—a room crowded with the most beautiful blooms. One competitor with fifty acres of pæonies brought on a carload of blossoms from down in New Jersey, put the car itself with blossoms in it in cold storage over night. The Detroit Florist Club did everything to carry the thing out splendidly, and yet with all the great competitors there, a lady from Ontario with a small pæony patch, of perhaps six acres, took first and second in two of the biggest classes. Surely we see that we can grow pæonies here with anybody else. That should be encouraging to those who wish to take up Horticulture in one line professionally. The lady was, of course, our well known member of this Association since it began, Miss Blacklock.

First Year's Scene in Miss Beardmore's Rock Garden.

WM. HARTRY: There was an exhibit of gladioli which went from the Province of Ontario, which, to use a well-known expression, "cleaned 'em up." I am satisfied that in Ontario gladioli can be grown, not only for the bloom but for the bulbs, as well as in any country in the world.

GEO. RYERSON: For the first time this year a catalogue has been put on the market advertising for sale sweet pea seed grown in British Columbia that is equal or superior to that grown in any other country.

J. M. PEAREN, Weston: There are just one or two matters that occurred to me from the remarks of Mr. Groves in regard to gardens, and I rather think the condition that exists in our own town is applicable to a town of any size. We have in our town a man who is one of the ablest gardeners, and that man, due to the fact that he was not able to get sufficient money out of his profession of gardening, had to take up work in a munition factory. We, as a Horticultural Society, are endeavoring to employ that man for the services of our town, and we think we will be able to pay him at least an equal amount to what he can earn in a factory. I am inclined to think that that condition exists all over. If the various Horticultural Societies would endeavor to look up men like that and see that they are employed in horticulture, it would be a great development to the town and to the country at large. Prof. Macoun's remarks in regard to the payment of men is indeed very applicable, and if we are going to develop horticulture in our country we must look after the men who have had their training and who are capable—they may not be scientifically educated along the lines of horticulture, but they are valuable to us.

J. LOCKIE WILSON: For the last two or three years there have been continually coming to my office splendid, solid men, who were too old to go to war, practical horticulturists, who wanted work, and they could not work at the prices that were offered for gardeners.

Moved by Dr. Bennett, seconded by Mr. Middleton: "That the Ontario Horticultural Association finance the amount of a premium due to Mr. Jack Miner for using a moving picture machine in this hall. And also that a collection be taken up this evening after the banquet to help Mr. Miner finance the purchase of food for his wild bird friends." Carried.

BEGONIAS AND THEIR CULTURE.

WM. HARTRY, SEAFORTH.

Begonias may be divided into three classes, namely: Rex, Fibrous, and Tuberous rooted.

The Rex give but little bloom, but their foliage is most beautiful, ranging in color from light green to a variegated bronze, and with proper pruning may be kept beautifully shaped plants, for house decoration, especially in winter when plants are scarce. They do well where there is but little or no direct light; hence they are valuable where there are no sunny windows, but they want heat and fresh air.

They start from a leaf readily. Take a fresh leaf with stem about three to four inches long, bury in sandy soil until the leaf rests on the soil, then cover all the leaf except a small portion just above the stem with same soil. Keep moist and warm, and they will soon shoot new leaves from the centre of the stem.

The soil should be rich leaf mould, with some sand and good garden soil. Use liquid manure during growing season once a week.

Fibrous Rooted.—This class is now a large one and may be obtained at most greenhouses. They are grand for winter bloom, many of them fairly smothered with blooms. Soil same as for Rex, but use slips or cuttings to start plants.

Tuberous Begonias.—It is of this class I wish to speak more particularly to-day.

Unlike the Rex or Fibrous rooted they are a summer flowering plant, and may be grown either in pots or in a bed in the garden.

There is no plant that will supply so gorgeous a bed as these Begonias from June 15th until frost sets in. They vary in color from pure white to a deep dark red, both single and double flowers from two to six inches in diameter. They are splendid as a cut flower. The flower with a portion of the stem and leaves placed in a shallow dish with moss and water will last good for three or four days.

Perhaps the greatest difficulty with this class is the starting of the bulbs, to grow which, however, is easy when understood. Bulbs may be secured from almost any good seed house.

The bulbs may best be started in March or April by securing a watertight box, big enough to hold the required number. Place about three or four inches of moss in the bottom of the box, then place the bulbs on this moss and again cover the bulbs about 1½ inches with moss. Put in a warm place, keep moist, and see that they are right side up. They will soon send roots into the moss and shoot up through the top layer of moss.

When bulbs have well started, say about two to three inches high, transfer into boxes of loose, fine, rich, bush soil. Keep well watered and in a warm place where the sun does not shine on them directly. Now get your bed ready, and plant about June 15th.

An ideal situation is the north or west side of a house or closed fence, where they will get the morning or evening sun. Make the bed one foot deep, of good sandy leaf mould, well rotted manure, and good garden soil—equal parts—and work up the bed several times before setting out your started bulbs. Place about 16 inches apart each way, water with rain water if possible. When plants begin to bloom, give once a week, a good watering of manure water, about as strong as ordinary tea in color.

As soon as frost appears take up the bulbs with adhering soil, put into boxes of sand, and keep in a warm cellar free from all frost.

Follow these directions and you are sure to succeed.

A Delegate: What is the best time of the year to set them out.

Wm. Hartry: That would depend on the locality. We set them out about the 15th of June. We start them in the box of moss about March or April. They have sometimes been in bud when I put them out. They transplant splendidly.

A Delegate: Do you use any combination at all to relieve the foliage?

Wm. Hartry: No, I use begonias entirely. If you get them about 16 inches apart, at first it will look as though there is quite a bit of space, but about the middle of July they fill up entirely, and sometimes you have to take out some of the outer leaves to get some of the flowers underneath.

A Delegate: Is there a large variety of color in the flower?

Wm. Hartry: Just as many variations as you would care to see—yellow, white, pink, scarlet, crimson—all colors between white and dark red.

A Delegate: What has been your experience in the life of the bulb?

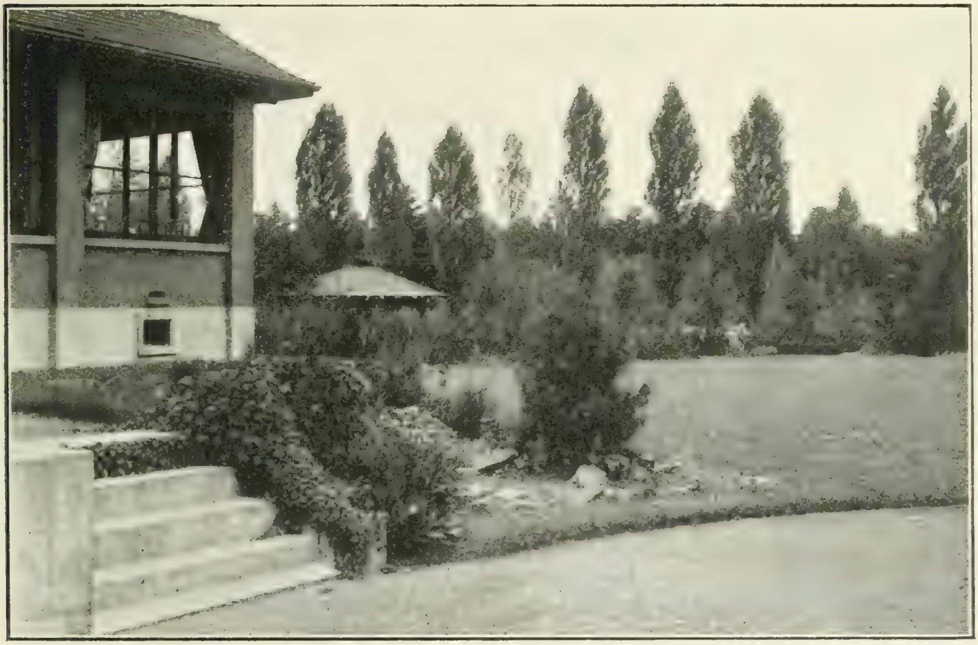
Wm. Hartry: I have lost from 8 to 10 per cent. of the bulbs during the winter season. Possibly that has been my own fault. I may not have taken the best of care of them.

A Delegate: Do you not divide them?

Wm. Hartry: Yes, they can be divided. I have not practiced that very much, but I have done it somewhat, and it has worked out all right.

A DELEGATE: We hear a good deal about planting these tenderer plants in good garden soil. Now, in our town I do not know where you can get a spadeful of garden soil. We can grow roses, but when it comes to tenderer plants we cannot do it. I lived in St. Thomas for a while, and I never had flowers anywhere like in St. Thomas, but I cannot grow any such flowers in Walkerville.

WM. HARTRY: Take the town of Goderich. The soil around the Post Office is all sand and yet they have the most magnificent roses there that you can see. They have cultivated the proper soil. In my Begonia bed I put a whole waggon load of leaf mould that I took from the woods, and I work it up into that until the soil will grow anything.



Good Foundation Planting. Note Special Treatment of Steps.

A DELEGATE: In our village we are thinking of getting up a village dump for leaves and such matter, and selling it for 5 or 10 cents a bag. I do not think there should be any difficulty in getting this in any village in Ontario.

A DELEGATE: In addition to the dead leaves, the farmers use rye to loosen their soil, plowing it down.

WM. HARTRY: I have used the moss from around fruit trees and shrubs, which I found excellent.

REPORT OF DELEGATE TO THE CONVENTION OF THE AMERICAN CIVIC ASSOCIATION.

Dr. F. E. Bennett, St. Thomas.

In respect to the Convention of the American Civic Association, it seemed to me that the one idea foremost in the minds of all those present was that a revolution was heading our way, and they wished to deal with the best methods of preventing that, and to that effect they were dealing with bettering conditions, such as town planning improvement, and the man who gave them the best ideas at the Convention was not an American, he is a Canadian, Mr. Thomas Adams, the Town Planning Expert for the Commission of Conservation. Mr. Adams told them what should be done there, he also told them how to do it, and I think they realized he was the man of the Convention.

Horticulture came in for a considerable favorable place in the solution of the problem of unrest, in forming a connecting link between capital and labor.

We were entertained splendidly by those people. They took us to the model town of Yorkship Village with probably 1,400 homes, some of them quite palatial, some of them not quite as good, but every one of them well equipped in every way, whether the cost was high or small, with the centre of the village designed with a large green municipal square, with a market, a town hall, a municipal theatre, with gymnasium, bowling green and ball grounds, with everything for the uplift of the community. This was built largely for the people in the vicinity, who are shipbuilders, but according to some it was not being inhabited as it should be, by shipbuilders alone, it seemed to be in the minds of many that the intermingling of people of different occupations—a great many of Philadelphia's people were coming and buying homes in that community—they thought it would have a very much better influence over the community where the interests were varied.

They took us over what you might call the tenement districts, and Philadelphia is really doing great work along that line. It seems to be their whole ambition to improve the working and living conditions of the working classes, by giving them room and light. We were also taken through the ravine drives of Philadelphia and to the homes of millionaires, the art clubs and art galleries, and they certainly treated the Canadian delegates royally.

They appreciated the work we are doing in the Ontario Horticultural Association. I think they can take some leaves out of our working here, but the Association as I see it does a splendid work over there. There were men there from Dallas, Texas, and from the West, but, of course, principally from Boston, New York and Philadelphia.

Wm. Hartry: I have recently received a communication from a concern in the States, and they asked a number of questions with regard to the Ontario Horticultural Association, and wound up with the statement the the Americans linked up with us in this work were really proud of the work the Canadians were doing along that line.

T. D. Dockray: My report is little more than a list of what happened at the Convention of the American Civic Association at Philadelphia. I cannot make much comment on it for several reasons: first of all, it has very little to do with horticulture; in the second place, it is an association, and while applying to the whole American Continent, there were only four of us from Canada there.

Naturally then their programme would be very largely directed toward subjects and topics affecting the United States of America. Thirdly, being held in the city of Philadelphia, the programme was affected very much by the city of Philadelphia, which is a city considerably south. Another reason is, I could not very well say anything in the way of criticism because we were the guests of the Association.

REPORT OF DELEGATE TO THE CONVENTION OF THE AMERICAN CIVIC ASSOCIATION.

Thomas D. Dockray, Toronto.

A Pessimist says:
"It can't be done!"
An Optimist says:
"It can be done."
But a Peptomist goes out
And does it!

This quotation, taken from the programme of the Fifteenth Annual Convention of the American Civic Association, held in Philadelphia, on October 29th, 30th and 31st, 1919, at once showed us the spirit of hopeful activity in which we were met together.

The general topic of the Convention was Constructive Community Service, roughly divided into such headings as (1) Government Planning and Zoning; (2) Parks, Playgrounds, Home and Wayside Planting; (3) Our Undiminished Nuisances: Noise Smoke, and Billboards; Is the Movie a Nuisance? (4) A Peace-Time Programme: What American Cities had accomplished before the War, as the Basis on which to Build after the War; (5) War Memorials; (6) Housing and Town Planning.

Mr. J. Horace McFarland, President of the Association, opened the proceedings in a few happy words of welcome. Mr. Arnold W. Brunner of New York gave a splendid address on Civic Centres and State Capitols. He pointed out the necessity of rational city planning and instanced many failures to profit by the mistakes of the past. Regarding the placing and erection of civic buildings, some of his terse expressions were: "Build what you can pay for: Sufficient unto the day are the taxes thereof. Selecting a site for a city hall is the king of outdoor sports. The practical man knows all about a machine but what it is for. Architects are sometimes honored, not because they are architects, but because they are dead. With one half of the public spirit of ancient Athens, wonders could be accomplished."

Mr. Fred. H. Moore, Director of Community Service, traced the Department of Community Service in Philadelphia to a Commission on Living Conditions under the Department of Labor. Community Service is a crystallization of the War, with a special objective of carrying the ideals and abilities of the experts to the rank and file of the people. In Philadelphia all classes of the people are associating with one another by developing playfields and by playing together, by community singing, by block parties, etc. This will further develop when community houses can be built for meetings, lectures, dances, concerts and dramatic performances. "Everybody neighbors" is their slogan.

The luncheon was presided over by Mrs. Edward W. Biddle, President of the Civic Club of Philadelphia. On her invitation several ladies present gave bright little three-minute reports on various aspects of civic work in which they were interested.

Mrs. J. Willis Martin, President of the Garden Club of America, presided at an afternoon session. She referred to the unsightliness of rural schools, and to the flagpole on the muddy square, with no grass, but lots of signs up reading "Keep off the grass!" or "Keep to the right!"

On Hamilton Highway.

Mrs. W. A. Hutcheson spoke on "Co-operation of Citizens, Trained and Untrained, in Beautifying Our Rural Towns," opening her remarks by references to that dreary sense of neat nothingness that pervades the average village street.

"Planting in English Garden Towns and Garden Suburbs" was dealt with by Mr. Thomas Adams, of the Conservation Commission, Ottawa. It was beautifully illustrated. On several other occasions Mr. Adams was asked to speak or to answer enquiries, his ready information, broad view and large experience proving most helpful to the Convention.

During the latter part of the afternoon the Convention adjourned to the Camac Street Clubs. Mr. Arnold W. Brunner of New York had said: "There is no street like it in the world." Here on a lane one block long and perhaps twenty feet wide, at the heart of the city, in old two story houses, are clubs of all kinds. We visited six of them, finishing up with tea at the Plastic Club, where we had a chance of meeting the other delegates and the earnest people of Philadelphia.

At the first evening session Mr. A. W. Welch of New York spoke on "The Palisades Interstate Park." He showed in motion pictures many camps and summer resorts where people from the crowded centres of population could go for nothing, or next to nothing, and spend a holiday. Another illustrated lecture that was interesting was "River Front Improvement in American Cities," by Leslie W. Miller, of Philadelphia. He showed the river front in most cases before and after improvement. The next day we went in motors along a driveway two hundred feet wide that had been reclaimed from the marshes. It is expected that the land to be filled in along this driveway will pay for the filling and the driveway. When near the Navy Yard we turned aside and inspected a few acres of small houses built during the war for the workers in the Navy Yard so as to have them handy to their work.

Special police permits and an escort had been obtained. So we had the privilege of a drive through the Navy Yard and saw everything from the oldest battleship to the latest hydroplane.

Then we crossed over the Delaware River to Camden, N.J., and went past the New York Shipbuilding Company's premises at midday, when its thousands of workmen were coming out. Just beyond is Yorkship Village. This consists of four-roomed houses and seven-roomed houses and some apartment houses or flats, with some shops, a garage, a gymnasium, a community building, a school, some diagonal streets, and many playgrounds and open spaces. The houses are sold on very easy terms of payment, or are rented. An electric railway runs through the village to Philadelphia.

We had luncheon at the gymnasium, after which Mr. Electus D. Litchfield, the Architect and Townplanner of this Yorkship Village, N.J., told us about the scheme and took us through the houses.

Also at Yorkship Village we attended a session of the Convention presided over by Dr. James Ford of Harvard University. Here we had an address from Hon. George Tilden Tinkham of Massachusetts on a bill he is introducing, providing for the creation of a Federal Bureau of Housing and Living Conditions.

Mr. George E. Kessler of St. Louis opened on the subject of "Regional Planning," and Mr. John Irwin Bright followed on the "Trenton-Philadelphia-Wilmington Region."

That evening, through the courtesy of Mr. John H. McFadden, we had a view of his beautiful art collection and were given a reception by the Art Alliance of Philadelphia, and a view of their picture galleries also.

Next morning Dr. Elbert Shaw, Editor of *Review of Reviews*, and Major Fred Englehardt, Director of the Bureau of Administration of the Pennsylvania State Department of Public Instruction, dealt with the topic, "Our Undiminished Nuisances: Noise, Smoke, and Billboards," and the report of the Committee on "Noise" was read.

Mrs. Otis Skinner of Bryn Mawr spoke very brightly on the question "Is the Movie a Nuisance?" As she confessed that she had to hurry away to see a new film, we then knew where her sympathies lay, and we agreed with her that the movie is not a nuisance.

The subject of "Urban and Suburban Zoning" was introduced by Hon. Lawson Purdy, President of the National Municipal League. The discussion was led by Chester E. Albright, of Philadelphia, and Edward H. Bennett, of Chicago.

"The Spirit of War Memorials" was the title of an address by Robert W. DeForest, President of the American Federation of Arts. A pamphlet entitled "War Memorials," by the Commission of Fine Arts, Washington, and a folder entitled "The Location and Design of War Memorials," by Andrew Wright Crawford and J. Horace McFarland, were distributed.

Stone Pathway with Border.

The afternoon of the last day was devoted to a drive through some of Philadelphia's parkways and suburbs and a visit to Lynnewood Hall, where Mr. Joseph Widener, the owner, was kind enough to give us a charming little talk on the many beautiful pictures and objects of art in the house. The Convention was brought to a close by a banquet on the evening of the third day, when several fine speakers gave addresses.

The American Civic Association does not publish a report of its convention But some of its good things, or extracts from them, are issued in pamphlet form or may be published in *Civic Comment,* the organ of the Association, issued occasionally. Enquiry as to any of these could be directed to J. Horace McFarland, President, Harrisburg, Pa., or The American Civic Association, 914 Union Trust Building, Washington, D.C., and would be carefully attended to.

SWEET PEAS.

H. W. Strudley, Stratford.

The sweet pea is the most unselfish flower we can grow. Properly grown, a fifty-foot row will furnish abundant bloom to keep ourselves and friends with a fresh supply of cut flowers every day for three months. One sometimes hesitates to cut from a rose bed the choicest bloom, but sweet peas must be gathered daily or they will not continue to bloom. When I hear people say they cannot grow this or that here in this climate, I think they are in the wrong state of mind, because I think all the things we grow can be grown in any climate if we make conditions right. For instance, I saw some very fine pictures of sweet peas which a lady said she had grown in Fairbanks, Alaska. They also grow at Calgary, Alta., to perfection; they also grow in Stratford, at St. Catharines, Toronto, California, Australia and England, so I think it is a great deal a matter of making the proper preparation.

To grow them successfully in the garden there are certain conditions which must be met in order to obtain the things we desire, long stems, good color, large bloom and long blooming season.

First of all good seed must be secured, preferably from growers who make a specialty of sweet peas. The Spencer type is most satisfactory, but the new varieties of early blooming or winter blooming Spencers do not have a long enough season of bloom out of doors, in this climate. I have found that the best soil is heavy clay loam, well under drained.

If you want to grow sweet peas to perfection, dig a trench two feet deep and two feet wide in the fall. Fill it in with soil well mixed with manure, and give it a good sprinkling of bone meal and slacked lime. Leave the top of the trench rough so that the frost can get into it. You will then have an ideal soil condition for planting in the spring.

Sweet peas should be planted nine inches apart or more to get the best results. I plant seeds March the 15th, in thumb pots, one seed to a pot. A sunny southern window is ideal for starting them indoors, or if you have, or can secure space in a cool greenhouse, it will perhaps be better than in a room. They grow better if kept from frost although they can stand a few degrees.

At the end of April they should have attained a growth of about six inches and be ready to transplant. I take the pots to the trench and give them a good soaking of water to release them with all the soil attached from the pots, loosen the lower roots a little, and plant them about four inches below the level of the ground.

As they grow I gradually fill the soil in to the level. Each pot is marked with the name of variety it contains so that colors may be blended in the row.

I set poles and attach wire netting at time of planting, and get the first tendrils attached to it as quickly as possible. No doubt proper brush wood is better to grow them on than wire netting, but suitable brush is hard to procure.

During the very hot weather a good soaking at the roots once a week should be sufficient, and a grass mulch will help to retain the moisture and keep the ground from cracking.

Plenty of sun and air are absolutely necessary, and a row running north and south is most desirable. After the first heavy blooming season a liquid fertilizer at the roots is desirable as, on account of great profusion of bloom, sweet peas are gross feeders.

Sweet peas in the open are free from almost all pests. The green fly can be washed off by a fine strong spray of water, which should be used in the cool of the evening, and not oftener than once a week, as water deteriorates the bloom.

The climate and soil of Ontario are ideal for sweet peas. I am under the impression that the best seed could be home grown, and trust that our flower seed growers will give sweet pea seeds a trial.

All my observations are from actual experience in strictly amateur growing, and a discussion, with the added experiences of other growers, would no doubt be useful in helping many to enjoy the experience of a successful row of sweet peas.

ROCK AND ALPINE PLANTS.

George Simpson, Ottawa (Read by F. E. Buck).

The ideal and practical come into collision when the town dweller turns his thoughts in the direction of rock gardening. His pleasant fancy pictures a small, sun-bathed ravine through which a glistening stream splashes its headlong way, plunging over rapids, cascades and cataracts, and finally expanding into a quiet, clear pool that mirrors the overhanging rocks and towering trees upon the hillcrest, silent sentinels standing guard over this valley of delight. But, alas for dreams! The site that actually confronts the man hungry for a rock garden is a flat, rectangular piece of land shaded by buildings and trees, intersected by concrete walks and sadly lacking in all those elements which provide what the artists call "atmosphere."

Though the rock garden must be constructed according to a well-thought-out and coherent plan, anything suggesting regularity is foreign to its makeup and destructive of the naturalistic ideal which must ever be kept in view. Troubles exist only to be surmounted, and the art of all gardening—especially rock gardening—is the ability to overcome difficulties and make the best use of the opportunities that lie before us. Therefore, let us be contented with our "lot" whatever betide, and do the best we can.

Let it be well understood at the outset that a rock garden is not a garden of rocks; nor yet the traditional heap of stones that encumbered many an old time flower enclosure and barked the shins of the unwary passing to and fro in the silent watches of the night. Such an abomination is occasionally seen, but is happily absent from present-day gardens which can lay any claim to conformity with artistic standards.

An attempt to imitate nature in some of her grandest manifestations by the reproduction in miniature of towering mountain peaks, bold crags, sheer precipices and torrential rivers may at first blush appear like a transition from the sublime to the ridiculous, especially when these marvels of creation are trundled in a wheelbarrow and set down one by one of a Saturday afternoon within the narrow confines of a backyard. Yet it can be done and far from the finished product appearing trivial or commonplace, it more nearly approaches the sublime in gardening than any other branch of the art of which I have knowledge. The appeal that it makes to the imagination is so seductive and irresistible that once you succumb there is no turning back, and happy is he who has crossed the threshold and entered into full communion with the rock-gardening brotherhood.

Dry Wall Gardening in Lorne Park.

The site should, if possible, be in the open because most of the alpines, especially those from near the snowline of the mountain ranges, are children of the sun and respond quickly to its wooing in the bright days of early spring. Shade-loving plants, comparatively few in number, can be provided for on the north side of rocks so placed as to shield them from the burning rays of the summer sun. Some of the primulas, saxifrages, gentians, anemones and campanulas, would fall into this class. The higher you build the greater is the scope for sunny and shaded places, but the altitude must be limited by due consideration for proportion and the more practical question of providing a sufficient supply of moisture at the apex during the summer drought. In order to accommodate a varied collection the growing requirements of the different plants must be provided for, which means that your rock garden, be it big or little, must present different aspects, sunny and shady, stony and boggy, gentle slopes and deep declivities, always remembering to provide a deep root run, whether in crevices, cracks, crannies, or pockets, for the penetrating roots of the plants, especially the true alpines, which would perish in the hot dry days of July and August if they could not find moisture at depth.

The details of the actual work are best learned from the observation and study of existing examples of merit, but unfortunately, though rock gardening is an old story in the British Isles, it is a comparatively unknown art on this side of the Atlantic and object lessons are few and far between. Then the only thing to do is to observe nature, study the best available books on the subject and give free play to the imagination and creative faculty. While the art is imitative of nature itself, no rigid line can be laid down and, general principles being observed, individual conceptions and interpretations will be the determining factors in the plan and its result. The main purpose is not to pile up rocks, but to provide suitable receptacles and sites for plants of different habits of growth and everything else should be subordinated to that end with the qualification, however, that these plants shall not only grow vigorously, but that they shall have the setting that will enable them to display their charms to the best advantage. The plant and not the rock is the paramount consideration.

Gray quarry limestone, abundant in many districts throughout Canada, makes an admirable material to use, especially if weathered, but the preference is sometimes given to sandstone because of its porous character and ability to absorb and retain moisture. Any stone will do, even field boulders, and the wise and practical thing is to use the material nearest at hand. It is better to use a few good sized rocks than a large number of small ones and if more than one kind is used—which is not advisable if it can be avoided—these should not be indiscriminately mixed, but built into separate parts of the work, the connection between the two being formed of a selection from both. The general outline of the garden having been determined and the foundation having been carefully prepared by deep trenching and provision for rapid drainage where the soil is at all stiff, the work of actually placing the stones is commenced and should proceed contemporaneously with the elevation of the mound or range. The stones should be well embedded to give them fixity and the appearance of naturalness, care being taken that stratified rocks shall lie horizontally; that the tilt shall be inward to catch and retain falling moisture and conduct it to the roots of the plants and, finally, that upper rocks shall not project beyond those immediately below and deprive them of their share of sunshine and rain. If a stream or pool is available, or can be improvised, the scope of the garden can be extended to include marsh, bog and water plants and its beauty and interest thereby greatly enhanced.

The soil requirements of rock and alpine plants vary from peat to the gritty and stony material composing the moraine, but a great many are quite at home in ordinary porous garden loam. While the staple of the rock garden may be a friable loam, having an admixture of sharp sand and leaf mold, provision should be made for those plants that demand special soil conditions whether it be an excess of peat, sharp sand, stone chips, loam or leaf mold.

The longing for a rock garden came to me a good many years ago. I looked around for a place to put it, but with my square city lot already crowded with perennial borders and other plantings there seemed to be no room for the alpines.

I decided that if I could not have a real rock garden I would at least have some rock plants and that I would grow them in front of the perennials. I procured a collection of seeds from England and I was surprised and delighted to find with what ease these alpines could be raised in the cold frame. If there is any other gardening experience more alluring than raising alpines from seed I have yet to hear of it. The seedlings in due time were set in the open ground without any particular attention to their soil or other requirements, and the little plants spread their fairy carpets of foliage over the bare ground and at the proper seasons produced beautiful sheets of bloom. Plants of some species not readily raised from seed were purchased. So well did all prosper that it was soon necessary to divide the clumps. In only a few instances were there any downright failures, and these I attribute to my then lack of knowledge of what the plants needed to promote healthy growth. My initial list was limited to easily grown varieties and I avoided the more difficult subjects that try the mettle and disappoint the hopes of even the experts and specialists.

The point of this recital is that so-called rock plants will grow luxuriantly and bloom freely where there are no rocks and where the medium is ordinary garden loam. Indeed some became so rampant that they usurped the space allotted to less vigorous things and had to be ejected.

Gaiety and cheerfulness are imparted to the spring garden by spreading masses of anemones. Iberis sempervirens, Myosotis, Alyssum saxatile, the dwarf Irises in varied hues, the creeping phloxes and moss pinks in delicate and refined colorings, arabis, aubretia in purples, blues, mauves, reds and pinks, the violas, in a variety of delicate shades, the polyanthuses, primroses and hardy primulas combining great beauty of flower and foliage with the rarest and most exquisite of perfumes together with other equally attractive dwarfs of the early year. Later, the campanulas, gentianas, silenes, saxifrages, Iceland and alpine poppies, lysimachia, erigeron, dwarf asters, cerastium, armeria and others come into bloom and prolong the pageant.

At the east side of the corner lot upon which our home happens to stand, there was a grass terrace letting down the lawn from the main level to the street grade. The fact that it was difficult to mow, coupled with my hunger for more land, started a train of thought which culminated in the resolve to convert this ill-kempt terrace into a sunny bank of bloom. Lest I should recant I went to work immediately, and the transformation was soon completed. The result was so satisfactory and so easily accomplished that I wondered why I had not thought of it before; although, truth to tell, a dry wall would have suited the situation better. The number and variety of plants I found comfortable room for in that small space—thirty-six feet long by three feet wide—is almost incredible. I cannot forego an enumeration because it illustrates the fact that large areas are not necessary to grow a respectable collection of rock and alpine plants. There are in the bank quantities of the lesser spring bulbs, alyssum, pinks, arabis, creeping phlox and moss pinks, aster alpinus, campanula, cerastium, iris pumila, polymonium reptans, veronica teucrium dubia, Iceland poppy, saxifrage, veronica repens, helianthenum, viola, pansy, leontopodium (edelweiss) polyanthus, sedum, silene. aubretia, lily of the valley, English daisy, semper vivium, polygonum, myosötis, gypsophila repens, and others. Many of these are not confined to single specimens. As the choicer things demand more room the fillers, such as myosotis, daisy, lily of the valley, etc. will be eliminated. It might be imagined that with the number of plants and the limited area, the result would resemble the proverbial stuffed pudding, but the arrangement is not unhappy and some very pretty cascades are formed in the bright and winsome colorings of the aubretias, phloxes, campanulas, and other plants of trailing habit which look best when sprawling over a mound or mantling a bit of grey limestone. These are only of a few of the commoner and more easily grown plants selected from the wealth of material available for the adornment of dry walls, banks and rock gardens.

Careful Hillside Setting.

It is not a bad plan for the person contemplating a venture into this branch of garden craft to become acquainted with his plants by growing a few on level ground before attempting the construction of the rock garden. He thus gets upon terms of intimacy with them, becomes familiar with their habits and requirements and knows better what to do when the time comes to place them in the positions they are designed to adorn.

What about hardiness and ability to withstand the rigors of the Canadian climate? On January 20, 1920, a temperature of 23° below zero was recorded at Ottawa. It is not, generally speaking, low temperatures that injure rock plants, but rather excess of moisture in the winter season when growth is suspended, and protracted drought in summer. In England mechanical devices are necessary to protect plants from winter rains, while our dry Canadian winters, with the thick protecting blanket of snow, afford conditions congenial to the majority of alpines whose native places are near the line of eternal snow and ice upon the mountain slopes. Miss Blacklock, to whom I am indebted for some choice rock plants from her fine collection at Meadowvale, has spoken to me of the difficulty she has experienced in wintering the aubretia. With me the aubretia has survived several winters without protection other than that of the deep snow. Altogether the Canadian climate—barring occasional summer droughts—seems particularly well adapted to the cultivation of rock plants.

All my rock plants have been so far grown on the level margin of the perennial borders or upon a sunny eastward slope. Now I have found room for a miniature mountain range about twenty-five feet long and varying from six to three feet in width, the rise from foothills to summit not being more than three or four feet. It parallels not a purling, pebbly brook, but a utilitarian garden path and this again is skirted on the other side by a minor range, the pathway forming the intervening valley. Materials that happened to be at hand— limestone rocks left over from the building, and boulders dug out of the garden—were employed in the construction. Ample pockets and other spaces and receptacles were provided for the plants which will be set in place in early spring. This is an extremely modest and simple affair, but it shows that the joys of rock gardening are within the reach of the ordinary amateur and are not a monopoly of any class.

I have hesitated to set down these few notes because my experience has not been such as to qualify me to say anything that would interest anyone but the merest novice. Yet I have dipped into the subject far enough to see that it opens up a new avenue of interest and pleasure and if what I have said here fires any gardener with the ambition to make and plant a rock garden I will feel that I have had some justification for asking you to listen to this simple story of a beginner's first attempt.

ARRANGEMENT OF FLOWERS AT HORTICULTURAL EXHIBITIONS.

Jas A. Wylie, St. Catharines.

The subject assigned to me is the arrangement of flowers at horticultural exhibitions. I wish to offer a few ideas and suggestions which, I trust, will be helpful in the discussion to follow and will prove beneficial in future exhibitions. Bearing in mind that all our work, whether in culture of plants or exhibition work, is primarily educational, we will consider the subject in that light, under two subdivisions, first the exhibitor, second the Society's Exhibition Management.

We presuppose that your prize list and rules have been carefully prepared, taking into account the locality and what can be best grown for exhibition purposes, the quantity, etc., best for display.

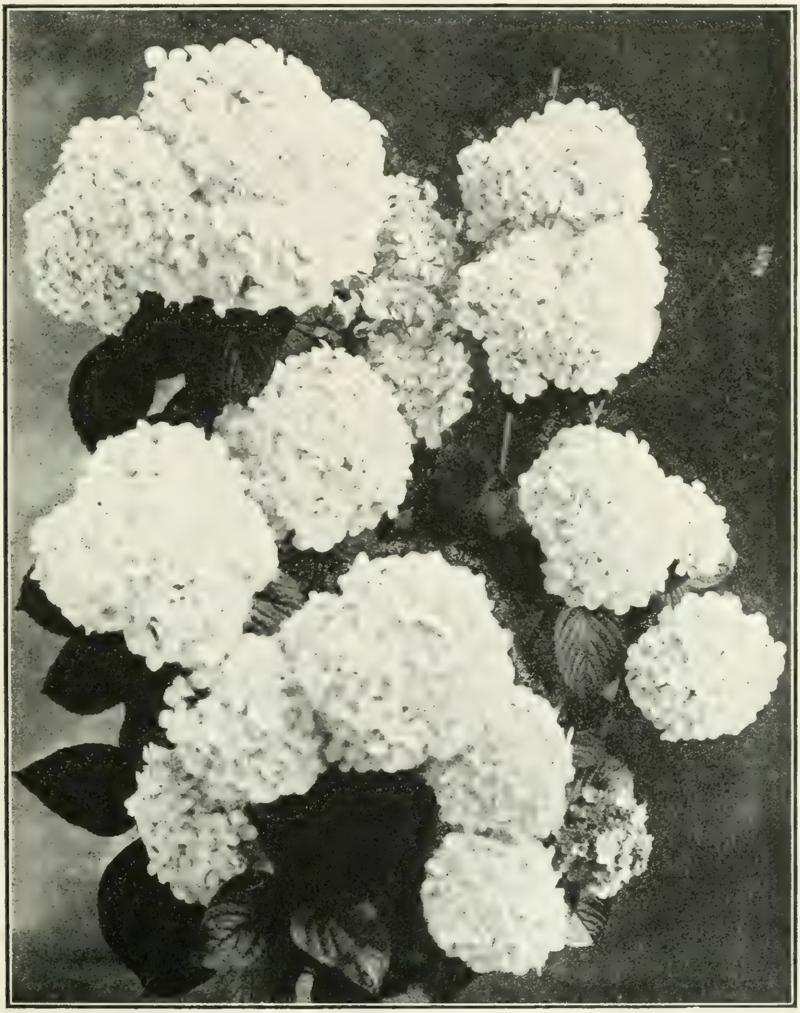
1. It is important that the exhibitor follow certain simple rules. Judge well his or her own exhibit in the light of rules and prize-list requirements. Select clean, fresh material for exhibition, having in mind the lasting qualities till time of judging and end of exhibition. Cut bloom as nature provides. Never mutilate material by shortening stems or sprays that nature has provided. She knows best. Cut with its own green. In arranging exhibit secure receptacle suitable for your purpose, not too small, not too large to be out of proportion to your exhibit. Avoid cramming down or crowding your exhibit in the receptacle. Arrange with sufficient of its own green loosely, spraying, and in such a manner as to appear to advantage from different viewpoints.

2. Society's management of exhibits for exhibition. See that plenty of tables are provided for exhibitors to arrange their exhibits, and suitable receptacles if at all possible; have plenty of water and table space for staging exhibits. Far better to have a little more space than not enough. Arrange your tables to give a pleasing effect on entering the hall, and from the centre, or other viewpoints. Much, of course, depends upon the hall. Vary your plan from time to time, lengthwise, crosswise and diagonally in the hall. Open squares for smaller exhibits in the centre; keep plants in pyramid formation in corners or along the walls as a background. Centre pyramid exhibits, when not too high to obstruct the general view of the exhibition, are desirable. Keep your classes together, and have classes and sections followed consecutively in natural order as according to your prize list. Always allow plenty of roomy avenues to view exhibits on all sides. Cover tables with suitable material to show exhibits to advantage. White paper, craped, if possible, wide and long enough to drape over tables both sides and ends, has been found quite satisfactory in St. Catharines' shows. Space off your classes according to requirements. In staging, handle as little as possible. Place high exhibits in centre of table, smaller ones to sides. Avoid crowding and place exhibits at equal distances; you are now ready for the judging.

DISCUSSION.

J. B. SPENCER: I have always considered it advisable to demonstrate while speaking. In Ottawa we have not a proper hall for our shows, and we have been compelled to use whatever was available from year to year. Last year we had our first show in the auditorium of the Normal School; our second in a music store, our third and fourth, which were the Pæony shows and the Rose shows, in one of the larger departmental stores; our next in a church, and our last in an empty store; so that you see we have not been able to follow any consistent plan in our exhibition work. We have, however, as the previous speaker has recommended, our own tables and our receptacles. The receptacle question was a very live one for some time. We never could satisfy the exhibitors until the year before last. Someone conceived the idea of making up some vessels. We therefore secured a large number, sufficient for our use, of galvanized vases, 4″ x 10″ size, which we use for pæonies, which were found very satisfactory because they hold sufficient water to last over night and through the day, quite long enough for the plants not to suffer.

For pæonies and large perennial plants we have found this very satisfactory. We have a smaller size for smaller plants, 3" x 8", also made of galvanized iron. It has been recommended that we have these stained with a soft green. From one of our exhibitors I have borrowed a small receptacle for some things such as Sweet Peas and Phlox. We have in the years past in Ottawa principally devoted our classification to competitions between varieties and colours without much regard to ornamentation. Two years ago we commenced to develop the ornamental side a little more, and broke away from the 4" base section which had been about the limit of our effort. We had had a 4" base section for garden flowers year after year, but two years ago we commenced to have competitions in baskets and bowls of roses, and we brought into that the services of some of the ladies, which had not been done before, and I can assure you it has been a very great advantage to the Society, because it has attracted many people to the shows who otherwise had not found it worth while to come. Last year we went still further in this direction, and



Snowballs, grown by Wm. Hartry.

as a matter of advertising, and we thought it good business from an educational standpoint—we induced one of our commercial flower dealers, a woman of very excellent taste, to dress a couple of the windows in a store. We put up a table in the morning, laid properly for a wedding breakfast in the one window, and in the other window a table laid for luncheon, with a placard on which was printed "To-morrow these tables will be decorated with flowers from the Horticultural Society." That worked very well. This year we are planning to extend that feature of our show. We have drawn up a prize list for our ornamental section that will run through our several shows, that is an early and late Bulb show, a Pæony show, a Sweet Pea show, and an Aster and Phlox show. We are planning to have three or more sections for ornamental competition—one decoration for tea table, or luncheon table, or dining table. Also glasses or bowls of flowers or vases of flowers for library or hall, and perhaps we shall include, if the directors see fit, bouquets for boudoir dressing table. Those three lines we think are practical and of interest to every home maker, and we hope by the aid of some of the professional people, whose services we can engage, to give some very valuable lessons in decoration.

There is one other feature we have—a stand with a projecting steel rod some three feet high, with a cardboard placard printed in large letters with the name of the variety exhibited on that particular table. We have also a small affair, just a pin, which you can buy in any book store, which is simply for displaying prizes or contrasts, which we display opposite the plants showing the name of variety. You often see a little ribbon suspended from a plant with the name written on by someone, which is not always easy to make out.

T. D. DOCKRAY: What is the price of the galvanized receptacle?

J. B. SPENCER: They cost somewhere in the neighbourhood of twenty-five cents. We asked for tenders, and that was the lowest.

A MEMBER: In Hamilton we found milk bottles very useful, and we were able to get them without any cost other than the draying charges.

T. D. DOCKRAY: At the American Pæony Society's Show I should think there must have been 2,000 exhibits, and they were all shown in pint or quart milk bottles—at least, they looked like milk bottles.

Moved by MRS. MALCOLMSON, St. Catharines: "That this Horticultural Convention, through the individual Horticultural Societies, take whatever steps possible to encourage in Canadian citizens the love for and protection of Canadian birds."

MR. KILMER, in speaking in support of this resolution, and seconding it, said there was printed by the Department of Education in the school books of the country the Bird Protection Act, which must be explained to the children at least twice a year.

REV. MR. MACKAY, Weston, suggested that this matter be referred to the Resolution Committee, along with others which might arise and which needed to be dealt with.

MRS. MALCOLMSON made the remark she thought the only Society for the protection of birds was in the city of Toronto, but MR. WEBBER said they had a very live society of a similar nature in Hamilton, and another member said there was also one in Montreal.

The following Resolution Committee was then appointed:

MESSRS. DR. BENNETT, St. Thomas, JAS. BROWN, Kingsville, J. M. PEAREN, Weston, W. E. SAUNDERS, London, and T. D. DOCKRAY, Toronto. Carried.

ARE OUR ANNUAL REPORTS INTERESTING AND VALUABLE TO OUR HORTICULTURAL SOCIETIES?

G. H. M. BAKER, LINDSAY.

The first Annual Report of the Ontario Horticultural Association was issued in 1906, and until 1911 only a few copies were printed. Since then there has been sufficient printed to send a copy to each member of every Society connected with the Association. We might consider the advisability of sending a copy to the Council of each city, town, village or township, where we have a society in good standing. Our Secretary, Mr. J. Lockie Wilson, is the editor.

To arrive at a proper estimate of the value of the Reports to the members of the several Societies, we must get from them their opinions. This I have endeavoured to do, and have had several lengthy letters from the Directors, who collected their information from their Districts, and the conclusion of all implies that certainly these reports have been a very great benefit. They are read by the members with interest, as the matter contained in them is not only interesting but of a readable nature, as well as containing invaluable information for all lovers of horticulture. The numerous beautiful photo scenes of lawns, shrubs, flower beds, and flower gardens, shown in the reports from year to year, are much admired and found exceedingly instructive. One District claims that they are certainly more instructive and consequently more of a benefit than the Convention itself. The long-drawn papers, when read, are liable to become tedious, and even at times tiresome, but when in print and they can be read at one's leisure, they appeal forcibly to us and are of great benefit. Some say they get very valuable information upon special lines, and have splendid results, as the information was given by first-class authorities, which could not otherwise be obtained except at considerable expense, by purchasing books containing such information.

A remedy for many of the troubles our flower lovers have is found in the Annual Report, and if it were possible to arrive at its value, we would all be delighted with what the Reports have accomplished.

The list of the several Societies, and the figures showing what they are doing, and the names and addresses of the several officers of all the branch Societies, is a splendid directory, and is the means of creating considerable correspondence between the branches, which helps to interest them in horticultural work. One Director says: " I assure you it has been a great benefit to the Societies in this District, there having been a marked increase in the interest shown and better methods of culture adopted; it also creates a loyalty to the Ontario Horticultural Association."

Some districts claim that the Reports are not used as much as they should be, and suggest that this question be taken up at the Convention, and think that the several directors might write each of the Societies in their district and urge upon the members to read the Reports, and refer them to any good papers in the current report, which should no doubt bring good results, and also if more time was given to discussion on horticultural subjects that would interest those who attend the Convention, and less to the reading of lengthy papers (which should be printed in the Report), the Reports would be more interesting and valuable, and help the attendance at the Convention.

They feel that every member of the Convention should know that he or she is at liberty to ask for any information wanted, and as we always have experts attending the Convention, capable of answering such questions as may be troubling lovers of Horticulture, the information sought for could be had, and if the questions and answers were put in the Annual Reports, the Reports would be better taken care of, on account of the kind of information they contain.

Some of the members suggest that the Annual Reports should be kept from year to year. No doubt many do keep them for reference and find them invaluable. To go back to 1906 or 1911, those of us who have kept the Reports, and have read them, will be able to back them up to the limit, for the very excellent and instructive papers are given by prominent men, women, and expert horticulturists from all parts of the Dominion, and from some of the very best horticulturists from the country to the south of us. From the information gathered through the different districts in the Province, re the Annual Reports, the Horticultural Association should feel highly gratified with the endorsement and great appreciation shown by the rank and file of the Horticultural Societies, and I am sure that it will be the desire and aim of our Secretary and Editor to still further improve the Annual Reports, and that he will have, from the Board of Directors, every assistance that they can give him. He deserves our very best effort, as we all appreciate the great interest he has taken in our Association and the Annual Reports.

An Ideal Lawn on the Farm of Mr. Jno. Bedford, Peel County.

A. Gilchrist: I have always taken a great interest in reading the Horticultural Reports. They have been of splendid educational value. The first movement in Civic Improvement started in 1903 with Lord and Lady Minto as Honorary Presidents. At that meeting some took exception to the organization as being too limited, and said it would be better to have delegates from all portions of the

Province. Our present organization was brought into being in 1906, and it is Mr. Lockie Wilson to a great extent who has held it together, and we are very much indebted to him for his good work.

Wm. Hartry: Many of our members are not careful of their reports. I regret that very much, but I think possibly we could help that out a little if the Society where we are located was to draw the attention of the members and the public generally, through our local papers, to the report and the very valuable things in it. I believe that would be a way by which we could induce the members to look them up and find an answer to the queries and questions they put to us when we meet from time to time.

J. Lockie Wilson: Without the many beautiful photographs supplied to me by the members of this Association we could not have had such good illustrations in the Report. It is your Report, and not mine.

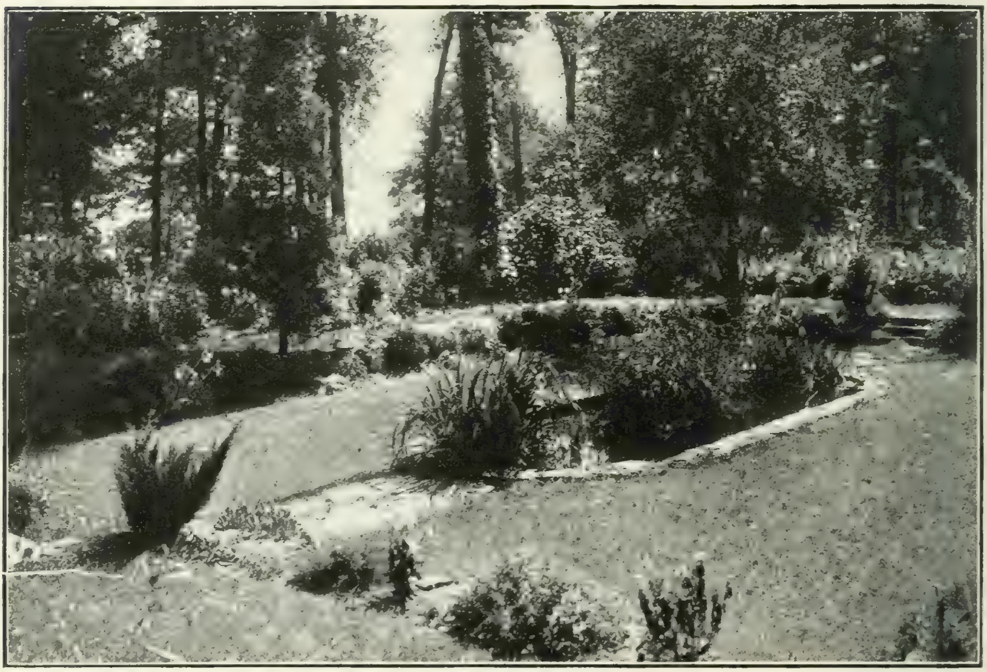
Geo. Ryerson: Our annual meeting represents but an infinitely small portion of our members of the various Societies throughout the Province, and whatever we do here at the annual convention is reprinted and is scattered broadcast to the members of the Horticultural Societies throughout the Province, through these reports, with the result that if our meetings are good here, then the report is of value to each member of the Societies.

J. B. Spencer: But in regard to those members who do not read the reports, it seems to be much more important that the Government should put a more attractive cover on than the ordinary blue book cover. I think a bulletin which I issued when I went into the Department was the first which carried a cover with an ornamental design. We are using in Ottawa a line drawing, a very pretty little thing, and using the slogan on that cover, "The Forward Movement in Horticulture." It seems to me if one gets a book with an attractive cover with the suggestion on it, it is much more likely to be read than the ordinary Blue Book.

Dr. Bennett: That expresses my idea of it. (He showed an envelope which they sent out, bearing the words, "St. Thomas, the Flower City.")

Wm. Hunt, O.A.C., Guelph: These are days of publicity, and the more we can appear before the public in every way the better, if our work is going to bear the scrutiny of everyone. Our reports, as has been stated here, are read by the enthusiast, but they are not read by everyone. Why can we not go outside of our own circle by means of them It can be done, and done through the medium of the daily or weekly press. Up to the present time I have yet to find a paper anywhere in any city, town or small village which is not willing to print any article on Horticulture which is of interest to a flower or vegetable lover. I would suggest that a great many articles appearing in our report be given by the secretaries of the Societies to the editor of the nearest newspaper who will print them readily for nothing. It is good reading matter. In the city of Guelph, our ex-Mayor, Mr. Carter, a very energetic man, has taken the trouble to write almost weekly, at any rate bi-weekly, articles in the two Guelph papers bearing on horticultural matters. He has taken roses and other features of floriculture, and they are widely read and commented upon, and the newspapers are eager to get them. And that applies to other towns and villages as well. It can be done without cost. The more we bring our work before the public, the more we shall advance the interests of horticulture and the better country we shall have.

T. D. Dockray: Now as to the publicity of this Association which Mr. Hunt referred to and the willingness of the press to publish anything in regard to your Horticultural Societies if you will only tell them: from November, 1917, until the end of the year 1918, I wrote to secretaries of Horticultural Societies—I was president then—asking them, are you doing this, or are you doing that? Do you want to have help along this line or that line? And those secretaries of the Horticultural Societies wrote to me—sometimes pessimistically—that they were doing all the work; others gave information very freely. I would write out a little paragraph that that Society was preparing for its spring work, that the secretary had things in line to start the people up as soon as something was ready to grow, and gave a little paragraph like that to the three great daily newspapers of Toronto, notwithstanding the fact that those papers were crowded with all sorts of war announcements. I found the secretaries very good at replying, especially when they found it was coming out in the Toronto papers. It showed how ready the papers were to give us this space, and it also showed how ready the secretaries were to do something for the Societies. It shows how willing secretaries will be to get out these reports if they are sent to them. It is for us as delegates from our Societies to report back and get them enthusiastic about these reports.



A Shady Pool Well Placed.

Miss Durand here showed a winter feeding station for birds made by Mr. McBean of the Technical School. It was built of a biscuit box, and in order to make it a little wider for birds such as the long-tailed Jay to get in, he put an extension to the box. This box had roofing material on the top, but the builder said canvas would do as well. Posts ran down from the box about a foot long with a tray, which Miss Durand stated should be filled with sand or earth. Little windows were at the side of the box, which she stated were made of celluloid in place of glass to protect the birds when they dashed themselves against the sides to get at the food. Cost of box, she said, was but $1.95.

NATURAL OR INFORMAL STYLE IN PLANTING.

Miss Mary Yates, Port Credit.

Style in gardening means the expression of the national quality in the landscape. "Natural" and "Formal" styles really are great fundamental garden forms.

The formal gardening form is symmetrical, balanced, enclosed, determinate.

The informal is unsymmetrical, not obviously balanced, not marked by visible boundaries, not apparently enclosed.

Though spoken of in terms of form any vital style must have something more. Form without spirit is dead—fit only for the crematory. The informing spirit of the natural style is the spirit of the natural landscape.

In considering the native landscape we speak of the spirit of the woods or the spirit of the mountains and in so far as common language can convey spiritual ideas we know what we mean. The native landscape can include the sea, the mountains, the plains, the forests, the spell of the great rivers, the little brooks or the lakes. The agricultural or cultivated landscape, meaning the farm landscapes with the rolling hills, is mild and pleasant to live with. In learning the lessons taught by the native landscape, the artist seeks only beauty, the beginner spends too much time criticizing what is bad, or trying to improve the indifferent. Look only for what is good, dismiss from attention as quickly as possible everything squalid, disorderly or ugly (it will be altered later). Exercise continually in seeking for the best in the landscape and in fixing attention upon it. The grace, the profusion and charm in nature are the despair of the gardener.

The art of grouping is a subject in itself, but this may be said that in art harmony should prevail, contrast should be the exception. Frequent contrasts in any work of art soon lose their force, become tedious and even obnoxious. All grouping should be studied with least emphasis upon the ground plan and much greater attention given to the vertical projection. This may be done more readily in the field rather than in a room, in fact, the effective development of sky lines cannot be reached in any other way. Every work of art should have a leading motive to give it character, the form and structure of this motive being of the utmost importance. The form of the group may take that of:

1. The single specimen.
2. The group of two.
3. The group of three.
4. Larger groups of five or more.
5. The row.
6. The mass.
7. The social group.

The structure should not include scattered specimens unrelated to one another.

The features and furnishings in the natural style of gardening should tend towards simplification and the use of a much simpler geometric pattern. Dominance should be practiced meaning the selection of one or two species to work with. The pictorial not horticultural treatment is meant. Color and texture, of course, should play their part, they cannot be considered here.

At this point thirty-one pictures illustrating the foregoing principles were shown. They were taken in gardens belonging to members of the Ontario Horticultural Societies, and were artistically colored by Miss M. E. Blacklock.

The custody of the open native landscape belonged to professional landscape gardeners, the beauty and the majesty of it should not be impaired, but this is work for the landscape amateur as well as the professional practitioner and may well play a prominent part in the propaganda of the Horticultural Societies, as follows:

1. Conserve the native landscape.
2. Restore it when needlessly despoiled.
3. Improve and clarify existing examples of it.
4. Make the landscape physically accessible to all men, women and children.
5. Make it intellectually intelligible.
6. Give a spiritual interpretation to the landscape.

This surely is a great and a glorious charge for future treatment.

A text book to be recommended for students is "The Natural Style in Landscape Gardening," by Frank A. Waugh.

Dr. J. A. Bothwell: I must congratulate Miss Yates. Her pictures are very beautiful. As she has said, there are two kinds of planting, formal and informal. And the informal is preeminently nature's gardening. It is a long way, however, from nature's garden to our front gardens. I sometimes wonder looking at the maps of the different continents we have on this globe, how perfectly it is made, and yet how informal it is. As we look at that great garden in which we live—the Garden of North America—we find that there are no straight lines, nothing repeated—think for one moment of that body of lakes with the St. Lawrence River feeding into them—think of that great picture—those lakes surrounded by the forests—surrounded by the different styles of shores, from the colored lakes of Lake Superior to the muddy shores of Lake St. Clair. When I think of the beauty of those lakes and rivers, and of that great picture down at Niagara, it is a wonderful conception, and yet when we come to look at the map of Canada we find that nothing is ever repeated. We can take up any part of the continent in the same way and find it is ever new. Nature never repeats. One great quality about nature's subjects is that they are restful. Suppose we dropped into the great natural garden that we have in this country—Muskoka—wherever you go the scene is not only beautiful but restful.

Now, if we want to plant informally, we must imitate nature. Nature is our great teacher along that line. That is one quality which we wish to install in our gardens—that they must be restful, and, if we imitate Nature, they will be beautiful.

As I said before, it is a far call from nature's garden to our own little garden. Unfortunately, in our large cities, most of us are limited to a little plot 30 by 100, and it is difficult to plant that informally. Those who have a larger plot containing many acres, who are situated in such a position as a resident of Rosedale, for instance, find it easier to imitate nature's methods. The entrance to our homes is very often necessarily very formal. If we had the room, it is very pleasant to have, as has been shown here on the screen, byways, and walks that are off the straight lines, but, at the same time, I do not think it is wise to make a driveway or a walk curved just for the sake of having a curve or doing away with straight lines. There must be some evident reason for making it that way. If there is no obstacle in the way, the right place is not there. For instance, you often see a sidewalk curved across a lawn. If there is no object for curving that sidewalk, except to make it curved, the effect is lost. If there is a tree in the way or a piece of shrubbery, then the effect is a good one; otherwise you have shown your hand too much—in all our imitation of nature we should try to hide our imitation. Another feature of the garden that has been shown is the perennial border. If a perennial border is along a walk it must, of course, conform to it. The border of a lake shore will conform to the shape of the shore, but if a border faces on the lawn, I believe the effect is much better to have that border irregular, wider in some portions than others; but as I said before, we should not make the irregularity apparently for a purpose. I have seen perennial borders made with a succession of curves that gave a very clumsy effect. The curves were there, and it looked to me as though the owner had heard somewhere that a perennial border should not be straight and had made it curved just for that reason. Now, if by planting in such a way that it would appear that the border was obliged to curve around a particular shrub that was growing about your height, that clumsy effect of seeking to make it irregular is eliminated.

A Good, Permanent Planting.

Then, as I said before, nature never repeats. If your neighbor has a certain kind of a garden I would not advise you to try to imitate it. Make your garden as your own; let it be a reflection of yourself. I remember some years ago when I was planning a lot of mine, I asked one of our professional men who happened to be in the city one day to help me lay out the lot. His answer was courteous, but he intimated to me that it would be much better if I just worked it out myself. I was not satisfied with that, and after I got to the house I applied to one of our growers for a landscape architect who could assist me in the matter. They sent a man out, and I have always been pleased since that I did not follow his plan. I did not intend to go into the nursery business. The house would have been swallowed with vines and choked with shrubs. I am sure he had planned for 400 or 500 different shrubs and vines in a small lot. So I believe the professional man was right. We should each one try to work out our own difficulties as well as we can. Let your garden be a reflection of yourself. Let it be you. Ladies are like an informal garden; no one likes to wear her hat just the same as another. I think our gardens should be different also.

G. H. M. Baker, Lindsay: The pictures that were shown on the screen were hand-painted by a lady for our Association here. They were a wonder, and it would be of great benefit if we had slides like that sent out to the different Societies in the Provinces. The coloring by hand is wonderful.

Rev. Mr. MacKay: Could we not have a request put into the Government Department that this kind of work should receive great extension in the interests of our work generally? We want a lot of it, and we could make it count.

HOUSE PLANTS.

Wm. Allan, Toronto.

Hundreds, yes thousands of house plants die annually in our cities through no fault of their own. Those that do not die outright eke out a miserable existence and would be better dead. The means available to prevent such wilful waste are simple in the extreme. It just requires a little common sense and judgment, backed up by intelligence. There are two things which terminate the life of a plant more than any other cause, namely, water and over-potting—that is, placing a small plant into too large a pot. A great many are under the impression the larger the pot the bigger the plant. This mode of treatment meted out to the plant kills out numbers. It is my desire to endeavor, if possible, to give in a simple way a few hints which I hope will be of use to many. By following up the instructions, the lives of many plants will be prolonged and instead of seeing so many miserable looking objects in our windows, the plants will be much brighter and happier, and, in response to the skilful hand of the operator and the tender care bestowed upon the individual plants, they are sure to flourish and grow, and bring forth their flowers to brighten up our homes, particularly during our long cold winter months.

The ideal conditions for house plants are practically the same as for human beings, 65 to 70 during the day and 50 to 55 degrees at night. The great difficulty with many is the keeping up of a regular and even temperature, this being particularly hard in zero weather. Many plants die, not through the fluctuation of the temperature in the majority of homes, but are drowned or chilled by applying too much water. Quite a number of plants can be grown and grown successfully in any home. The finest and most beautiful rubber plant I have seen was grown by an amateur.

The Aspidistra, another very common but beautiful plant, can be grown in any home and brought to perfection with ease without the aid of a greenhouse. It is plants of this type we should endeavor to procure for the home, omitting those that require more congenial surroundings, such as lots of humidity, together with a high temperature. Plants grown in a window will invariably turn to the light. You should change the position frequently, failing to do this the plant will grow one-sided. Turn the plant half way round each day, so that each half of the plant will get an equal share of light. During winter take care that none of the leaves of the plants touch the glass during the night or when there is a frost outside, because it will at least chill and perhaps kill them. Ventilation is another consideration. Have a window open when at all possible somewhere in the room on the opposite side to where the plants are. Watering is a most exacting requirement of plants. It is easier to drown a plant than to kill it by drought. No hard and fast rule for watering can be made. Plants may need water twice a day or only once in two or three days. The best way to determine whether a plant is dry is to rap the pot sharply with the knuckles of the hand. A hollow or ringing sound shows the plant needs water, a heavy dull sound indicates that it has sufficient moisture. The common fault in watering is not doing the job thoroughly. Never give a little surface sprinkling, the best way is to take the plant to a sink or tub and give the soil a thorough good watering, allowing the plants to remain there until the water has had a chance to drain off. Never allow water to remain in saucers or jardinieres. By so doing the water will chill the roots which will cause the soil to sour and eventually the leaves will turn yellow and often drop off. Potting is another most important operation. The best time of the year to repot house plants is in the spring, say April or May. Only in very exceptional cases do house plants require repotting during the winter. As a rule such plants as Ferns, Palms and Rubber plants are resting or making very little growth. To repot would be positively dangerous. The average amateur as a rule does not realize this. The plant may be in a good healthy condition. The grower is worried because new growth is not forthcoming. Then he will repot the plant by putting it into a much larger pot and nine times out of ten the plant becomes sickly and often dies in a few weeks. I would much rather feed with liquid manure than repot during the winter. Never work on the principle the larger the pot and the more soil, the bigger and thriftier the plant. Good drainage is absolutely necessary. To be successful with plants, see that the drainage is perfect. In the bottom of each pot place some broken pieces of pots, clinkers or even stones can be used, put the pieces in with convex side up, the cracks fit better; according to size of pots used the drainage should be from half an inch up to three inches in depth. Over this place some of the coarse screenings. On top of all place a little moss or dried leaves to keep the finer soil from washing down through.

SOIL.—No hard and fast rule can be laid down for the amounts of the different ingredients of a potting soil. I have found that a soil composed of three parts good rotted sod, one part leaf soil, one part well-rotted manure and a little sharp sand, all mixed thoroughly, will give excellent results. With plants ordinarily grown in the house, always bear in mind that during the dull dark days of winter they must be watered with great care. It is better to sprinkle the leaves occasionally with a little tepid water through a rubber sprayer than to be continually flooding their roots. Also remember not to allow water to remain in the saucers as it chills and rots the roots. Be sure your plants get plenty of air. It is as absolutely essential to their living as it is to us, but at the same time guard them against draughts.

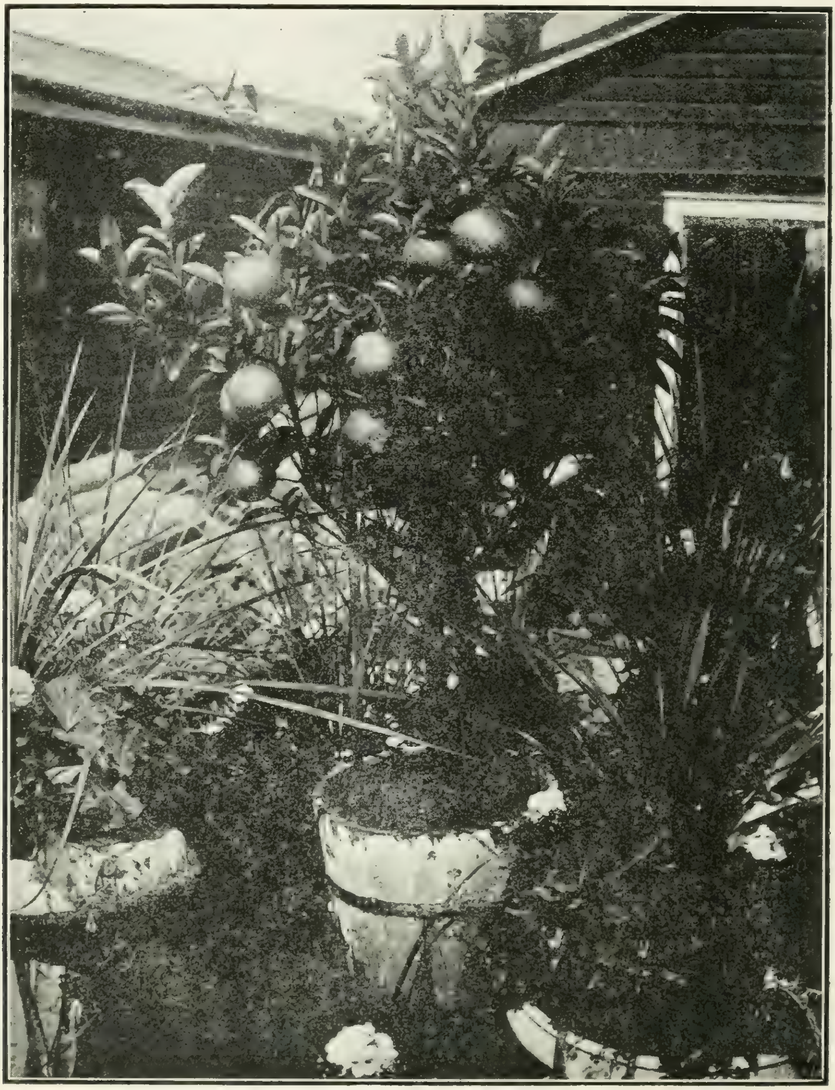
Another most important point to remember when repotting your plants, be sure to leave at least from half an inch to an inch of space between the top of the soil and the rim of the pot. Leave enough room in all cases to hold sufficient water to penetrate the entire soil.

Another important thing to mind is cleanliness, and if you keep your plants perfectly clean you have won more than half the battle.

WILD BIRDS.

JACK MINER, KINGSVILLE.

I was born in the best state of America, Ohio, which has turned out more Presidents than any other. At the age of thirteen I was brought to Canada, and liberated in Essex County, Ontario, the best county in the world. We got along well, ten of us in the family, five boys and five girls. We chopped down ten acres, grew oats and corn, had three good meals a day, oat meal, corn meal and miss a meal. However, I was father's favorite; he always called me in the morning to start the fire, so I got out to hear the birds.



Tropical Plants, grown by the late W. T. Ross, Picton.

I am here to talk to you on the value and intelligence of our birds. As I said before, all I know is experience. I went to school three or four months in my life. The second oldest boy in a family of ten children, I had to put my shoulders to the wheel. I was deprived of school, but thank God, I was out of doors! You have read that there was never a tribe of Indians but worshipped some idol. No intelligent man can live outdoors, and study nature, without being compelled to believe there is an over-ruling power.

Time rolled on. We were, as I said, poor. My brother and I took to hunting for the market. There are lots of game in Essex. We two boys became expert shots. We left a bloody trail behind us; everything we could get ten cents for had to come down—to get warm clothes with. There is no man to be found on the American continent who has had a better time than Jack Miner. We hunted and had that sport. But time rolled on, I saw there was something lacking.

Why did these birds that let the farmers go close to them, when we got there, fly away and scream as if Satan himself was after them? Did the birds know that we were their enemies? I know now that they did. I did not then know. Well, we hustled along the best we could, and I cut out the shooting of birds. I have not shot a quail for twenty years.

When I was thirty-three years of age, a dear little boy that God loaned to me for a little while—put his arms around my neck, and said, " Come on to Sunday school with us, papa, it looks so lonely for you to stay here." I unclasped those little arms and said, "Go along, you are all right!" The next Sunday here we were all on the way to that little old red school. The superintendent saw me and gave me a hearty invitation to come back. Well, three months after I was teaching Sunday school. We started with the 20th verse in Genesis, and we found that God created the fowls of the air. In the 26th verse, God created man after His image and likeness, and gave him dominion over the fowls of the air. "Say, Uncle Jack," asked a boy, " does that mean that we can have dominion over that wild flock of geese that we saw up there? " " That is what it says," I told him.

I had lots of material to entertain those boys with. I want to say here, kindness without firmness is a total failure. Our class grew. We kept on studying farther along. We came to the passage, " If a bird's nest chance to be before you on the ground, or in a tree, and the dam sitting on her young ones, thou shalt not take the dam, but let the dam go that it may be well with thee and thy day."

At that time, also, I was reading the life of Job and the 12th chapter says, " Surely if you were the people and wisdom should die with me. If thou knowest not such things as these, ask the fowls of the air and the beasts, they shall tell."

Do the birds return to their same homes? I know they do. A few years ago when the fellows would ask me I would have to take father's advice and drop the subject. What is the value of a robin that sings so beautifully, that catches so many cutworms? Because he eats 24 cents worth of wild cherries, we bang him down, even if he had rendered us $10,000 worth of service. The ignorance of us, intelligent and educated people!

In the spring of 1912 I stole the eggs from an old black duck and a domestic fowl eventually became their step-mother. At the time they were two weeks old they had accepted me as their step-father. Instead of being afraid of me, if I tapped the tin with the water in it, they would come towards me and we would work together. Don't forget with your birds, there is no better feed on earth than custard. The crows taught me that. That is what we feed the ducks on.

As soon as the ducks had their growth, I would put the custard on the side of the brickwork around the pond, and I noticed a motion in the water, and I looked down and here were the little bull-heads, the ducks came out of the bushes to get the custard, the fish came to the edge to get the crumbs that came into the water. Now to experiment. I went to the other side of the water and tapped the tin and the fish came to the edge of the pond. And the ducks came from out of the bushes. The fishes and ducks came at the same call.

The ducks grew like mushrooms. When they were seven weeks old we named them Polly, Delilah, Susan and Helen. On or about the first of December they disappeared. The following day Dr. Rutherford, of St. Catharines, shot Helen at Mitchell's Bay. The next spring I had a path walked down looking to hear from these ducks. The 10th of March Polly came home with a tag on her leg (Mr. Miner here showed the tags he uses). Delilah came home on the 18th, and Susan came home on the 30th. That fall they migrated again. Noah Smith, of Paris, Kentucky, shot Susan on February 27th. On the 14th of March Polly came home for the second time, on the 21st Delilah came home. In the fall they migrated again. Delilah came home on the 13th of March and Polly on the 16th of March. But a shot had cut the side of Polly's beak off. I mixed up some porridge but Polly could not eat it because of this piece of her beak being off, and I got a spoon to feed the bird out of it. Yes you can do it. First throw some food away out of the spoon, so it will know what comes out of that spoon. Well, after three days Polly was eating out of my hand, and with the scissors I clipped the piece of beak off and in two weeks Polly was all right. That was the third spring. Polly decided the next fall that she would stay home. Well, those two ducks had evidently outwitted thousands of hunters who hid in the ambush for them. They got wild ducks out there squawking to bring them. But they had outwitted them all for three years in succession. Was it all worth while? Is life worth living! I once heard a man lecture on "Was Life Worth Living?" He said it all depended on the liver!

In the spring of 1916 I saw a fellow fire two barrels after Polly, and I have never seen her since. But Delilah for the sixth time came back. Mrs. Miner and I caught her the fifth time and put a new tag on her. During the 6th summer she raised five families. She raised two 8's, two 9's and a 12. What did we read? "Let the mother go that it may be well with thee and me, that it may be well with thee and thine days." If you figure out the progeny of Delilah on a slip of paper, you will get a progeny of 2,300.

The duck is one of the most faithful of mothers. She has to be father and mother both, because that scoundrel of a drake deserts her the minute she goes to the nest and becomes a Brigham Young for the rest of the season. No more perhaps, though, than some of us.

The Canada goose is one of the grandest creatures that ever stood on the American continent. If the people of Canada knew the Canada goose and its principles, you could not keep him off our flag for ten minutes. If any of you in Toronto can tell me how Canada came to be honored by having the Canada goose named "Canada" goose, I wish you would write to me and tell me.

One day I was hurrying along the street, and I ran into a preacher. I don't know why some of them are that type, but he turned and said, "Pardon me, I did not know I was going to run into a goose." The greatest compliment a man ever paid me was to compare me to a goose—the Canada goose. The Canada goose! Why it flies so high, he keeps so high, they have outwitted us. How did

I find it out? I hunted wild geese for about 25 years. Very few wild geese came down in Essex at that time. I would be out in that field looking for him long before the stars closed their eyes. If there was a little snow on the ground in March, I would have a sheet, three corners tied down, a blanket underneath, and I would be there, all hidden but my eyes. Eventually I would see them coming. As it gets a little lighter I can see there are seven or eight in the family. Eventually I could hear the quack, quack, "All is well, follow on, everything is well." I would get under the blanket, there is nothing of me to be seen, but just my eyes. I am lying on my back. Two men come out in the next field to ditch. It is all off, I might as well come out. But they come right straight over, right on over them, and then I am all ready for them. I don't know what it was, but just before they got in reach of that deathly gun, they changed that note, and every goose started for flight. They would cover half an acre and then turn around for Lake Ontario. Why did they not take to flight for those two men? That fellow under the blanket, he got two of our family last year.

I told the neighbors that if they would not shoot at the wild geese I would bring them around these ponds. I bought seven wild geese, and took the wing right off at the joint and put them into the pond. That was in the spring of 1904. Don't shoot them, boys, I said, and I will let you come right here in the pond and shoot them. In 1905 no geese came; in 1906 no geese came; in 1907 no geese came. In 1908, late in April, one morning down came 11 wild geese, right into the pond. We were quiet, let them stay and have a feed. The next morning they were there again. The boys were there with the guns. I said, "Boys don't shoot them." "Well, you said we could shoot at them." "That is all right, boys, leave that with me." However, the boys did not shoot at the geese. Later on we lined up one morning, I voiced the signal, the boys were down there. "There they are boys, behind that bank. There are the two big ganders," and we looked at them from a window in the shed. All ready boys! For some reason I missed those two ganders. When the smoke cleared away, there were five geese lying there dead. The two ganders got away. They went to Lake Erie. To my surprise and delight in two hours they were back again, and the next morning they came back and lived there. The boys said, "No, we will not shoot at them until Uncle Jack tells us to." The two stayed, and about the first of May went north. On or about the 15th of March, a young man who worked with me, said, "I have been wondering about the geese you said were coming back. I have been looking for them." On the morning of the 18th of March, I was out watering our self-starter, I heard a strange honking—my seven geese were within 100 feet of me. Well, there was a line of geese coming, and the whole 32 of them dropped down there and introduced their families. I was still behind the old starter, hiding. Eventually I came out. We let six go and 32 came back. The boys lined up and we shot 10 in the spring of 1909. On the 4th of March, 1910, they started to come. It is nice to have guests, but it is embarrassing when you have more than you can entertain. Three hundred and fifty came. After we had shot 16 there were 350 to go north. In 1911 they started to come on the 20th of February, and by the 15th of March, when the first bunch of geese was coming down into the pond, you could not see the south end of them. How many came? Don't ask me. Where is the feed coming from? I counted 170 shots fired at those geese coming from the lake, but they were over the top.

In 1911 we shot some geese out of a bunch of five, two were killed, and one had its wing shot away. They gave me this gander—the biggest I ever saw. I clipped the wing off, and put him in the boat house. In about half an hour the two came back. By that time there were 1,000 geese in the pond. The two came back. Well, the place rang with honks, "Come on down, come on down!" But they turned toward the lake. When this particular one with the broken wing called from the pond they immediately came down, after they had been shot at just a half hour before. They came back to the house. Why? Because their brother was there. The goose migrated with the big flock on the 2nd of May, 1911. That big gander never left his brother. He voluntarily stayed with his brother for the rest of his life. How many men did you ever know that lived in prison with their brother? We named them Jonathan and David.

A Satisfactory Permanent Pathway.

That took the "shoot" out of the boys. I have seen many a boy bring his sweetheart and show her Jonathan and David. I have more confidence in one thimbleful of education than in a pailful of shooting compulsion. The boys never wanted to shoot a goose after that.

The flock of geese grew. On a windy Good Friday of 1913, there was a field full. Now I bring the feed over to the house and it is only the tamer ones that come to feed.

Lest I forget, I want to mention this: There is a sort of impression apparently that I am laying a trap for some of the Indians at Hudson Bay. It is true, I did say my heart sank when I got the tags back from the Indians of some geese that they had brought down at Hudson Bay. But the best missionary work I ever did was to feed up that wild flock of geese and let them go up to the Hudson Bay Indians. You have an idea what a nice feed a wild goose is for some of those fellows who had been feeding on snowballs and icicles for six months. So far as my being opposed to the Indians, that is not true; I will keep on sending the geese to them as long as I can.

In the fall of 1917, on the 5th day of October, while we were eating dinner, six wild geese dropped down into the pond, a pair of old ones and four young ones. I went out of the house and called to the wild geese. As soon as they heard that call they answered.

In the fall of 1917 there were small ears of corn. I went out with twelve small ears of corn, and I went right into the park, and here was this old gander standing. His old sweetheart was in the water. I got one of those ears of corn and threw it at him. The young geese jumped up, but he quacked, and immediately they came down. Do birds have a voice? By the time I threw about the eighth ear of corn, these young wild geese, who had nibbled at the corn, seemingly afraid of it, had taken their father's word for it, when he said, eat the corn, and what did that tell me? They came clear from Hudson Bay. It was the first corn they had ever seen, and they were hungry. In about fifteen minutes the little fellows were eating the corn; in less than half an hour they had it cleared off. They had been without food for a long time.

Mr. Miner here told of a device they had used in tagging the geese, getting them into the captivity of an enclosure by means of a net and string. He continued, "I told my mother-in-law's daughter to hold the door. She held the door and I went in to catch them, and that old gander showed fight. I overpowered him, put the tag on his leg, and liberated him. He flew off about two rods, but came back, looked back to the pen and he put his chest up—that faithful old father, and while I was catching the rest of the geese to tag them that faithful old father never left the door until the last one of his family was liberated.

We caught him the second time and put two tags on each leg. I had heard father tell about what a faithful general Sir John Moore was. We named him Sir John Moore. The flock migrated with others that fall. In February one of them was shot in Maryland. How do I know it was the same one? In later years I have added to my tagging system by putting on each tag a verse of Scripture. Whoever gets a bird that I tag now gets a verse of Scripture, whether he needs it or not. On this tag was "No good thing will I withhold from them that walk uprightly."

On the 18th of May we were eating breakfast when one of the children called "Father, father, look, there is old John Moore," and within two rods of the window was Sir John Moore watching the other four of his family eating breakfast. Then the four stood while Sir John Moore had his breakfast. Is it worth while? Is life worth living? I tell you it is! Do I know they were the same ones? Yes. They migrated; they went up north. In August, I got a letter with these tags in it "No good thing will I withhold from them that walk uprightly." In addition to this, the Indian says, one of the geese had two tags on. Mr. Walton, a missionary who has been up on the east coast of Hudson Bay, is in the audience. He came to see me and he brought me three tags he had collected from the Eskimoes and Indians.

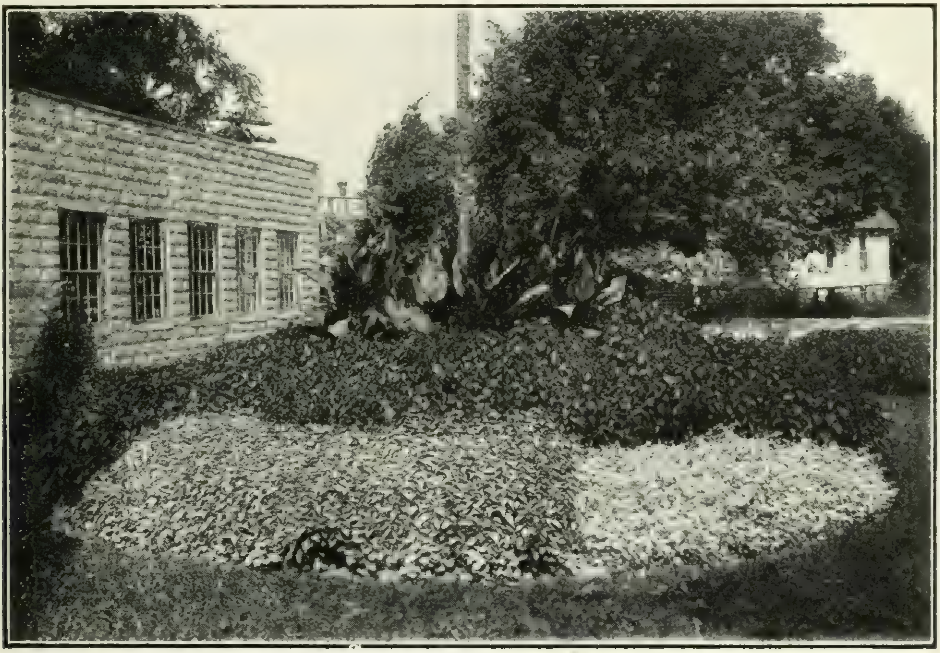
Jack Johnson and his family: He is an old gander I have. He and his old sweetheart decided to keep house just 200 feet from the north door of the shed. During her six weeks on the nest he is always on guard. One picture would do for all the wild geese I have on the place. All the time his sweetheart is sitting on the nest, he is watching—you would think it was a wooden goose. I watched a fight between Jack Johnson and an American eagle one day. Old

Jack Johnson stood up to his opponent, and, anyway, the eagle decided to go west. One day Old Charlie, the cart horse, came a little closer to the nest than was good for him. I saw him approaching the nest, and I said, "Where is old Jack Johnson?" Right at Charlie's heels I saw something move. The old goose is right on the ground, his neck is out, he is lying right on the ground, but look, those eyes apparently standing out. As old Charlie was grazing closer, old Jack Johnson right at his heels, pushing himself along just like a snake, Charlie is coming a little closer until he is within two feet of the nest. Now, why didn't the gander bite that horse before he got within two feet of the nest? When the old goose raised up his wing, old Charlie's ears went forward, and his attention was rivetted on the goose. Well, he started and bit him right in the fetlock. I never saw a horse so scared since. He came out there running. It had added $100 to his appearance. You would not have known he was a cart horse. You would have thought he was a horse from the race track. That horse snorts yet when we take him to that spot. Is it worth while? What does that tell me? How they protect their nest.

Old Mrs. Goose took sick and left the nest. I think she had taken a sunstroke sitting out on her nest. Jack Johnson scoured the field, she took to the pond. We put the eggs under a domestic fowl. She hatched all the young ones out. Keep your nest dark in a case of this kind, and as quickly as the little ones get dry you can give them light, as she will be a good mother to them. While Mrs. Goose was sick in the pond, old Jack Johnson was seeking those young ones. There is a brick wall between him and those young ones, but he goes to the north and to the west side of the field hunting all around trying to find them. He knows there were six goslings in those eggs. Then he goes back to his sweetheart. The wild geese lived at the back door. The wild geese grew like mushrooms, great big fellows when they were five weeks old. And they would run up to that old hen and she would try to mother them. My wife said those geese had to be taken away from that door. I started over there, and I said, "Tommy, Tommy," and you would not have to call, just say "Come on," and they followed me through the gate. I had no hat on, just a pair of overalls and working shirt, barefooted, the sun was coming up, sparkling on the dewdrops that were hanging on the blades of grass. The geese were following me. Old Jack Johnson was away over at the corner, but when I came around the corner he saw them. When I got them through the gate, I went on about my work. But I came back just as hard as I could when he saw them. I turned and ran back, I was afraid he would kill them before I got there. But I need not have been afraid. When he got within about two rods, the gander ran up to the geese and stopped, and the goslings lay right down on the ground. I am not here to say that he caressed them, but he drew his beak right over the top of four or five of them, and you could hear that voice for miles around. I looked around, and what did I see? The old goose coming out of the pond, falling down and getting up. He gets the goslings and they come together. If I live to be a thousand years of age, I will never witness a more beautiful reunion than I saw that morning when I was all alone with the wild geese. They all started for the pond, the old hen followed, and the goslings came up to their stepmother. Old Jack Johnson stood to the side, but hit that hen with that bad wing, and you could see the feathers fly. The goslings came back after their stepmother, and old Jack Johnson came with them, but the stepmother would not return. She eventually came from the fence and the goslings came to her with their baby talk. The hen followed them out to the pond. No bird or birds could do anything to her. Old Jack Johnson protected her from that time on. She stayed out there until the snow drove her into the hen house.

Mrs. Jack Johnson went from bad to worse, and we had to bring her into the house and give her some medicine. Jack Johnson went along. Coming by the cow stable, I went in and put the cow out, put the old goose down until I went into the house. When I went back the old goose was dead. That gander apparently blamed the cow for the loss of his sweetheart, and he lay for that cow for more than two years. Then I sold her. I had a goose for four years, and I had Jack Johnson two and a half years after his sweetheart was dead. And I would never keep a wild goose again for ten minutes after its mate was gone. I would not want to hear that sad honk.

The only reason I am here to-night was because I promised Dr. Bennett. I cancelled over thirty engagements to talk this fall. That morning as I stood there, tears running down my face, to look at the reunion. "The beasts of the fields shall show them, and the fowls of the air shall show them." What came before my eyes, what were my thoughts? A thought maybe that has touched you: "Will we know our loved ones in the beautiful beyond? Do we change when we get over there?" Those thoughts are in your mind. Will my dear mother's hands be cramped with rheumatism, those shoulders bent with the years, or will she be in the rosy tint of girlhood, the same as when she became father's sweetheart. If we change, will we know each other. Oh, people, my sister, when her third boy fell, I was there when the telegram came, she threw her arms around me, "Oh, Jack, I will meet my boys, and I will know them!" Will she know her boys? That was the thought. Will they be in the uniform, or will they be little fellows as they were when I taught them to shoot. Will I know my curly headed little girl? The wild geese have cost me thousands of dollars, and



Artistic Flower Bed, Wallaceburg.

yet I am in debt to them. They have settled that argument in my chest forever: If God in heaven can give the wild ganders intelligence enough to know their loved ones, why should I not know my loved ones again. He says, "The birds of the air shall show them and the beasts of the field shall show them."

Mr. Miner wound up with a challenge that as God had created us after He created the wild birds and given us dominion over them, we should live up to His trust.

Mr. Miner then showed his slides, illustrating his talk of the evening. He stated he had tagged altogether 351 wild ducks, and had received back 115 tags; he had tagged 105 wild geese, of which he had 35 tags back from Hudson Bay, and 10 from the Southern States.

In showing the slides, Mr. Miner again made a strong plea for the protection of the birds and geese during nesting season. He showed a picture of Susan and Delilah, also one of David and Jonathan. A number of the slides showed the geese in the pond by his home, and the crowds of people who came to see them. Also demonstrating their tameness and utter trust in members of his family, eating food from the spoon of Mr. Miner's little son, etc.

TREASURER'S REPORT.

C. A. Hesson, St. Catharines.

The accumulation of figures in connection with your finances is not a very onerous one. The amounts of expenditure are not very numerous, and I cannot forbear to say that the time has come when this Association should put itself in a position financially more fitting the importance of this body. We had an evidence of it yesterday when we were up against a proposition of perhaps failing to get Mr. Miner's lecture of last evening. It brought tears to my eyes. I think that you will agree with me that that was an instance where we as a Convention should recognize as a necessity an added assessment from year to year for increasing our financial status. We are liable to be called upon for these unexpected expenditures almost any moment. I understand that there is a notice of motion in regard to the fixing of the maximum affiliation fee at a higher figure than has prevailed in the past, and you probably will have that matter brought before you, and it is with that hope that I am referring now to this point, so that you will be more ready to see the necessity for increasing the fee of the Association.

Your Financial Statement has been duly audited and I have the honor to present it. The Affiliation Fee Statement shows that only 48 Societies out of 96 affiliated; where are the rest of them? They got my notice. I did not get their fee.

Mr. Hesson thereupon moved the adoption of his report, which was seconded by Mr. J. H. Ross, and was carried. The Financial Statement appears on page 6.

The Chairman stated he was quite in accord with the thought of increasing the affiliation fee, so as to have a surplus sufficient to meet any emergency that might come in time to come.

The election of officers resulted as on page 6.

SELECTING JUDGES FOR HORTICULTURAL EXHIBITIONS.

Henry J. Moore, Niagara Falls.

(Prepared for the Names and Varieties Committee of the Ontario Horticultural Association.)

Horticultural displays if not educational are not worth the time and trouble spent on them. No matter, however how great their educational value, no matter what their cost, if the judges' decision creates a wrong impression as to what constitutes quality of the subjects exhibited, or constitutes art in the exhibiting thereof, the exhibition is worthless. The judge should be qualified to judge the subjects, and only he or she with experience in the culture of the subjects and with a knowledge of their qualities should be chosen to adjudicate.

Wrongful decisions not only mar the educational value of exhibitions, but discourage the enthusiasm of those who out of pure love for the work exhibit the products of their gardens. What is more galling to the enthusiast, who having produced splendid specimens finds that they are to be judged by a mere tyro. Some one, probably, who has been chosen on account of the friendship which exists between himself and an official of the society and not because of any special qualifications on the part of the would be judge himself. Officials who choose judges in this way are worse than the judges who accept the responsibility, and in the final analysis of things will be found to be working wholly with the desire for personal aggrandisement, and not with a love of the work of the society, or for the furtherance of education along Horticultural lines.

The Choice of Judges.

This paper is not a criticism of judges. It is a plea to the presidents and directors of our Horticultural Societies to discriminate in the choice of judges. Experts alone should be appointed to judge the classes in which they are expert. Judges may differ in their ideals, but in experts these ideals may be of a high order. In incompetent judges idealism cannot exist, for knowledge which they lack is the food of idealism. Judges without knowledge cannot by their decision establish a standard worthy of attainment by the great mass of growers and exhibitors, and as the judges' opinion carries great weight with the masses wrongful decisions will influence many individuals to believe that wrongful standards are proper.

Judges without a proper knowledge of the subjects they undertake to judge cannot properly advise exhibitors as to the qualities an exhibit should possess, or as to proper methods of arrangement. The eye and the ear are two of the great channels of education. What we see and hear largely influence our thoughts. Thus when the standard is created it should be of the highest possible order. Exhibits if not grown to conform to this standard do not bring out all the skill of the grower. If not staged to conform to this standard, they do not require all the art in staging of which the exhibitor is capable. If the exhibits are not so grown and staged that the eye can see all the points of usefulness and beauty, so much the worse for education.

It is not the purpose of this paper to tell judges what their duties are. Experienced ones know that when the actual work of judging is done their responsibility does not or should not end. It is the judges' duty to advise the officials of the Society who are responsible for the exhibition of changes they consider necessary for its improvement, and to suggest a means whereby such can be brought about. He or she who neglects this duty when they know certain changes to be desirable are more responsible then the exhibitors or officials for the standard that is set.

Who is more qualified to judge the gladioli classes then a gladiolus grower, who roses, than a rose specialist, who vegetables, than a recognized expert in this line; the Herbaceous perennial classes, than one who having grown these successfully may expertly judge them; the fruit classes than a recognized fruit grower? These remarks apply to our larger exhibitions, but in the case of small or general exhibitions where only small classes of subjects are shown, the judging might well be left to one or two expert horticulturists, otherwise just as "too many cooks spoil the broth," so may "too many judges spoil the show."

A Vista in High Park, Toronto.

The means to the end. The Names and Varieties Committee of the Ontario Horticultural Association, have of recent years worked with the desire to standardize the methods of judging, in that score cards have and are being prepared for the use of judges. It must, however, be admitted that these score cards are of as much use to the exhibitor as they are to the expert judge. In the case of the former they serve a very useful purpose as a guide, for by their use the judge is able to advise as to the various points of merit required in an exhibit.

The work that the Names and Varieties Committee has undertaken with useful plants, and names, has been done with the object of making the various lists it has prepared useful standard references. These when finally printed and bound in book form will be valuable to every member of the Ontario Horticultural Association, and to all who deal in any way with plants.

With a view to the further co-ordination of the activities of the Ontario Horticultural Association, the Names and Varieties Committee would suggest that this convention consider the advisability of establishing a system, whereby qualified judges could be placed at the disposal of societies which required such services, and that the Names and Varieties Committee be allowed to select, or another committee be formed to select a number of judges, so as to establish and maintain an uniform standard at our exhibitions which shall be recognized by the Association.

The standard cannot be too high. The best judges cannot raise it too high, but the worst ones can so lower it as to make our exhibitions mediocre and without educational or aesthetic values.

SCORE CARDS FOR THE DAHLIA, ASTER, GLADIOLUS AND DECORATIVE CLASSES.

SCORE CARD.

DAHLIAS—*Cactus, Show, Decorative, Paeony Types.*

	Comparative Values.	Values for Judge's Use.
Colour and freshness	30	25
Form	30	25
Size	20	25
Stem and foliage	20	25
	100	100

It is necessary for *Cactus* and *Show* types to have good centres, but note should be made of this requirement in considering Form.

DAHLIAS—*Pompon.*

Use above score card, but substitute "Good Centre" for "Size."

DAHLIAS—*Single, Duplex, Collarette, Anemone Types.*

	Comparative Values.	Values for Judge's Use.
Colour and freshness	25	20
Stem and foliage	20	20
Form	20	20
Size	15	20
Arrangement	20	20
	100	100

ASTERS.

	Comparative Values.	Values for Judge's Use
Form	25	20
Size	25	20
Colour	25	20
Stem and foliage	15	20
Condition and arrangement	10	20
	100	100

GLADIOLUS.

	Comparative Values.	Values for Judge's Use.
Length and form of spike	30	20
Colour	20	20
Freshness and number of open flowers	20	20
Arrangement of spikes	10	20
Texture and size of individual flowers	20	20
	100	100

THE DECORATIVE CLASSES—*Bowls, Vases, Bouquets, Baskets.*

General effect, due to simplicity, naturalness, or originality of arrangement	25
Artistic effect, due to choice of flowers and harmony of colours	25
Freshness and quality of flowers and foliage used	25
Evidences of cultural skill	25
	100

THE DECORATIVE CLASSES—*Table Decorations or Group Displays.*

General effect, due to beauty, naturalness, originality or skill of arrangement	25
Artistic effect, due to colour scheme, choice of flowers, or arrangement	25
Freshness, quality and quantity of flowers used	25
Evidences of cultural skill	25
	100

THE WORK OF HORTICULTURAL SOCIETIES.

J. H. Ross, Winchester: In opening this discussion, I am going to speak of a society where the population is a little over 1,000, and I think that we have a banner and model society with, perhaps, a population of 1,200. We have a society with a membership this year of 220. Last year it went over 250. We did not put on a whirlwind campaign like they did at Weston. I must congratulate the representative from that place on the splendid work of their society last year, we go along in the ordinary way, but we have a good organization.

Now in having a good organization, the first thing to have is good representative men and women as officers and directors. If you can get such officers, you will get the interest of the community in which you live.

The next good point is to enlist the support of the local newspapers. To do so you will find a very great help, and I do not think there is an editor worthy of the name in Ontario, who is not interested in horticulture or in what horticulture stands for—the beautifying of your town and the educational effect of horticulture on the people. Now in the community that I live in, we observe certain rules in connection with our society. First of all, we enlist the support of the Municipal Council, the School Board and the churches. We receive a grant from the Municipal Council of $25, from the Hydro-Electric System of $25, from the School Board of $25, and from two churches of $10 each. We keep the grass cut, we provide seats in open squares and in some places flower boxes during the season. We employ a man part of the year to whom we pay $75 to look after the grounds and these plots. The two churches that contribute to our funds have large lawns and we have planted flower beds in these. They are planted each year by the society and kept in order during the summer months. Besides that we plant trees around these lots. Last year we planted nearly one dozen trees around one church lot. For the School Board, we take charge of the school grounds.

We are very fortunate down in Winchester, because we have a very large school ground facing the main road, going to the depot. We have a frontage of perhaps 300 or 400 feet, the High and Public Schools adjoining. We have taken about fifty feet from the front on these grounds, have erected an irregular wire fence and in front of that fence an irregular border. We have clumps of shrubs at either end of each school grounds, and at the centre, at the entrance there are shrubs. Flower beds are located at different places and these are all kept up by the society during the summer months and present a very pretty sight. We have the reputation of having the finest and best kept town in Eastern Ontario and it is all through the efforts of the Horticultural Society. The Hydro-Electric have a plot near the depot. We took it over, levelled it up, sowed it with grass seed, put a large flower bed in the centre, and made a border around the fence. We planted a dozen trees around the power house and we have one of the prettiest little spots in Winchester, through the efforts of the Horticultural Society for a few years.

Adjoining the hotel there was a vacant lot. A house had been burnt down and the ugly ruins remained there. The grass was long and unsightly. The Horticultural Society took up the question. It belonged to a busy doctor. He had no objection to us fixing it up, but he said he had no time himself to look after it. The society took this up, cultivated the brush in the front of it, so that it now covers the ruin, and they put flower beds in the centre. The guests of the hotel go out and enjoy themselves under the shade of the trees. We have also been using it as a public place in giving welcome to returned soldiers. All this was accomplished through the work of the local Horticultural Society.

Our superintendent mentioned in his report that ten new societies were formed in 1919. Two of those come from our district. We are operating under favorable circumstances, because the Commission of Conservation at Ottawa have selected the County of Dundas for experimenting. They have selected eight farms. They go to these farms and ask them to devote a certain acreage to the growing of certain grains or vegetables, under the direction of the Conservation Commission. They are doing a good work there because of the interest that is taken in these farms and whatever is done on these farms under the direction of the Department of Conservation is of great value. Each year the farmers gather together in Winchester and we have a good time. We had a splendid address from Prof. Macoun a year ago. On that occasion it was suggested that we form a County Horticultural Association. I am throwing this out as a suggestion because it may be worked in other places, although we have not accomplished much with it so far. The object of the County Association is this: that if there is a society within the county that is not strong or if the interest is not keen and it is hard to get the people interested in Horticulture, the neighboring society will send a delegate to the annual meeting to help them along or give them advice how to improve their society. Thus we work through the county to our mutual benefit and we hope this year the Association will accomplish some good work in that way.

In order to promote our organizations we must get good live representative people for officers. Enlist the support of your Muncipial Council, your School Board, your churches and your municipality. If you do that and show the enthusiasm that should be shown by members of the Horticultural Society, it is infectious and bound to spread, and you will have a prosperous society.

A Delegate asked Mr. Ross how the expenditure was met for all the labor entailed, remarking that Mr. Ross had intimated an expenditure of $75.

J. H. Ross: The man we have employed has charge of the public and high schools, and also the town hall. This is in addition to what he receives for the other work done, and he gets paid for cutting the lawns of the school. He is also a member of our society, and he is as much in love with the work as though he were not paid for it.

A Delegate: Is that all your expense?

J. H. Ross: That is practically all our expense in connection with the care taking.

All the plants are furnished at the expense of the society.

A Beautiful Scene in Mr. Godfrey's Rural Home.

Last year three members of the society offered their automobiles, and we took a trip to a greenhouse in Prescott, some twenty-four miles away and we bought and brought back with us geraniums. We have been favored, too, by the Experimental Farm at Ottawa. I should mention that because it is due to Mr. Buck. We asked him if he would come and lay out the school grounds for us. He did so and also offered us to give us a hedge of Siberian peas and assisted in the planting of it. We had a voluntary brigade—a banker, doctor, lawyer, editor, minister, druggist and several others—all prominent citizens, who went out to the grounds, took off their coats and assisted in the planting of the shrubs and flowers around the school.

Wm. Hartry: We pay a very small amount in our Town of Seaforth. We have a committee who takes charge of the public beds; others of the school grounds. We do not pay out much money for doing the work; we would rather put the money into shrubs, bulbs, etc. We think the love of the work to us is worth all the time we put on it.

J. H. Ross: We have a good membership for a town of 250. At our annual meeting we appointed committees for the district. Two on a committee, a district to a town. We also have a committee for the country, and those that we do not see personally are reached by phone. In that way we get our large membership, and we enlist also the support of the people all around.

A Delegate: Have you ever approached the Federal Government in regard to the beautification of your city? A few years ago in Stratford we approached them, and each year we are allowed to spend on the Postal building, putting flower boxes around it, $40. By a by-law passed in the City of Stratford, we voted $50,000, for the improvement of our Waterworks system. This was largely through the influence of the Horticultural Society.

Dutton Delegate: A great many of the things mentioned by the speakers to-day are such as we have introduced in our village. We have gone a step further, though, in the soliciting of sympathy. In our last County Council our Reeve, who is a very enthusiastic horticulturist, brought up the matter of receiving some financial assistance from the county, and the county has promised to supplement the Government grant with 25 per cent. We started in this work, a lot of very green people, but a great deal of work has been accomplished, and chiefly through working upon the interest of the people; a little piece of ground in the town has been converted into a park. At the present time we are placing that land in the hands of an expert so that it may be better laid out.

REPORTS OF DISTRICT DIRECTORS.

District No. 2.—H. A. Middleton, Director.

In regard to my stewardship of District No. 2, I regret to say that I have no new societies to contribute to our Association.

In May, 1919, I visited Colborne and found abundant material to assist in forming a branch. I had a copy of the act mailed from Toronto to a man who appeared quite interested and said he could get names for a good membership, but when I called later on in the summer he was away from home and, unfortunately, I have been unable to call there since.

At Brighton also we can get a good membership, I believe. In speaking to a merchant there, he said he would assist and help in organization.

At Trenton, the Mayor seemed very favorably disposed and I left him expecting he would call a meeting and get under way but his entrance into politics and his subsequent election as M.P.P. sidetracked my efforts.

Outside of our district I approached the Reeve of Port Perry and gave him some literature and I think you will see a branch formed there before long.

Many communities are open to have a good society formed in their midst and would suggest a small neat card, stating reasons why you should have a live horticultural Society in your town.

District No. 4.—Rev. W. M. MacKay, Director.

If it were not for the magnificent assistance given to me by past-president Dockray, and Vice-President, Miss Yates, and the district, I think so far as the directors work would go officially at least we would not have very much to report.

I became interested in the Horticultural Society largely through Juvenile work, which lies closest to my heart, but I had the privilege during the year of visiting some of our organizations—not all—and the more I get into it the more difficulty I have in getting out of it so far as horticulture is concerned. And I sometimes wonder which I am in, horticulture or the work of the pastorate. I find, however, there are compensations, and, sometimes, I am able to interest a listless family in church affairs through horticulture. Sometimes I get the interest of the parents through the children's chickens. Most of the organizations through my district are well established. I have no real new organizations to report, but we are holding our own. So far as I have been able to gather from the reports received, all are not only holding their own but gaining substantially. The organizations are doing good work and growing. You will agree with me that in the few moments allotted for this report anything that might be said should be about the newer organizations. We have a new organization in New Toronto. If you will take my advice, you will keep your eyes on that little new town. There is community work evolving there which is worth while keeping in touch with. Their new organization, for which Miss Yates is responsible is worth while. It is a manufacturing town and in this community work, horticulture takes the leading place.

We have a new organization in Riverdale. The Superintendent and Secretary of our association tell me that the way is open for the Riverdale organization to become fully established and stabilized. That is perhaps in a sense a new organization. They are doing good work there.

Nothing has been said with regard to a phase of work in our own Society that, in my judgment, Societies might take up, especially in the winter time—to find employment for your Horticultural Society, and that is in the way of civic improvement. We have had many excellent addresses along different lines, and we can see how the love of nature and the love of the beautiful in birds and flowers produced such a man as we listened to last night, of the right sort, and as horticulturists we should not be satisfied with anything less than that.

In the work of civic improvement, there is one special thing that I would like to draw attention to. Our Horticultural Society put on a floral memorial service. All our returned men were home and the Horticultural Society supplied flowers to the churches which had the memorial service in the morning. There was a Union service at night in the open—one of the strongest things we ever put on at Weston. I mention this to show the way in which Societies can make themselves effective for the production of manhood and womanhood. So far as reports go, in my own district, No. 4, the work carried on is expanding, and there is strong evidence of a substantial forward movement in the work of District No. 4.

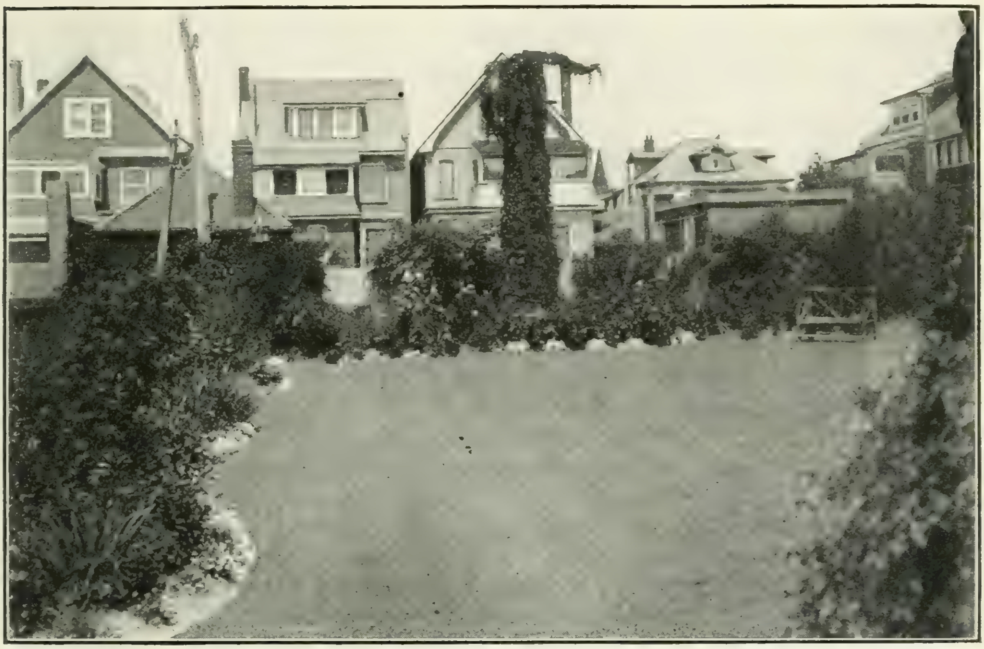
District No. 5.—Dr. Smith, St. Catharines (for W. B. Burgoyne).

Those who were assembled here last year are aware that Mr. Burgoyne gave $1,000 for a rose garden. It has materialized in a most miraculous degree. The work was delayed for a long time in the spring. For the first year of a rose garden the results were the most remarkable. It is one of the show spots of our beautiful city. We have two exhibitions—the Rose Show in June, and the Flower Show later on in September.

District No. 6.—J. A. Magee, Hanover, Director.

The interest in gardening, flower and vegetable, is quite alive and keen in most quarters of the district, and the educational value of the different Societies and of the Annual Reports of the Ontario Horticultural Association is inestimable. The civic authorities in the various towns and villages are showing increased sympathy with the work we are endeavoring to carry on in the way of private and public improvements.

During 1919 a new society was started, or rather resurrected, namely: Walkerton, with a membership of 160, and a new management. They had a fine flower and vegetable show in September in which the school children's exhibits played a large part. Plans have been made whereby the Floral Department of the C.P.R. are co-operating in making the station plot a beauty spot in the town; and it is hoped to have a park, though small, in the heart of Walkerton next year.



A Well-kept Lawn.

For 1920, Chesley have about completed organization of a new Society, a result of pioneer work by the Hanover Society, directly and indirectly in that town. This promises to be a Society from which we may hear in the near future.

The Clinton Society had different lectures during the year by such well-known experts as Dr. Bennett and Mr. Hartry, the results of which were seen in a fine show in September, many store window exhibits during the year, and much civic beautification. Here work was done at the G.T.R. station, where a veritable rubbish dump-hole of about one-eighth acre was converted into a little park and rest-house.

The Owen Sound Society, with a membership of 211, expended much time, money and effort in a School Products Fair in September. The Board of Education donated $75 towards it and private citizens were very loyal also to the cause. Two judges from the Agricultural Department were present. The Society also planted several public flower-beds in the parks and public grounds, besides being instrumental in having Mr. Tomlinson of the O.A.C. on hand to suggest improvements in the general planting of the town.

The Hanover Society, with a membership of 221, have had an exceptionally busy year, handling all sorts of fruits, flowers and shrubs for members, and taking part in the general improvement of the town, such as planting post-office flower beds, school borders, window-boxes on municipal buildings, station yards, etc., besides giving advice on the planning and planting of private borders. The Society own two full-sized town lots, which were formerly unsightly brick-yards, but which are being converted into what will soon be a source of pleasure and profit to the citizens. In this space demonstrations are being made of perennial borders, choice varieties of standard shrubs, flowers, etc., and surplus stock from premium lists are held in reserve for future use. At present the Society values its premium supplies at $500. The town cemeteries are being remodelled and the Society has been given almost full charge of this. In the near future a park will be established and further opportunity will arise for good service.

Many other Societies are doing good work, but the details were not forwarded to me.

District No. 8.—*Dr. Bennett, Director.*

I want to mention one innovation in my District. Inspector Taylor, who is absent now, and myself, at the invitation of one of the members of the County Council, took up the matter with the Elgin County Council regarding giving a grant to the Horticultural Society, supplementing the Government grant. Inspector Taylor took the matter up with the County Council, and they unanimously voted a grant of 25 per cent. of any Government grant, so that Dutton, Port Stanley, West Lorne and Aylmer, and Rodney eventually, will receive 25 per cent. of the Government grant this year, and any that are formed next year. That is an excellent feature in any county. The Societies in our district have increased their membership considerably. Stratford has over 900 this year, London has a membership of some 1,600. Our own Society in St. Thomas has a membership of 2,108, with an increase of $3,600 in receipts, making the receipts nearly $12,000 this year.

Dutton has a splendid little Society full of enthusiasm, doing a splendid work. During the year Dutton, Port Stanley, West Lorne have been formed into a District. I also addressed Otterville and Leamington. I have had the honour of forming about half the Societies that were formed this year. I have had to go outside the district. Now, there is one thing here: go when the people want you. Red tape is all right, organize when the Government says. But, as I said to Mr. Scott, if a man wants to come into the Church, don't ask him to wait two months, tell him to come now—"Now is the accepted time." I feel the same way about horticulture.

District No. 9.—*Mr. John Glassford, Director.*

I have written to the secretaries of all the thirteen societies in the district, asking if there was anything wherein I could be of service to them, which was free for the asking. I received replies from four.

I called personally on either the secretary or president of almost all the societies in the district. They all are optimistic of the future, excepting Walkerville, which seems to have gone backwards, I am sorry to say. The trouble seems to be that persons capable have not the time to give to the work.

I took up another phase of work this season which turned out a failure, in so far as response was concerned, yet I am still persuaded it is to be commended. With the school inspector's permission and sanction in both East and West Kent, I wrote the teacher and secretary of every school in the county, asking them if they would not enlist the young men of their section to bring in and plant native trees and shrubs around the school yard. This would be accomplished before spring work on the farm commences, and any trees they wished to buy we would supply them at cost. I never received a reply. But that makes no difference, I will keep at it until I do succeed.

This is my first year as director. I find it requires a little time to become conversant with the duties a director should know.

My time is not my own, but belongs to an old Toronto firm, who have been very considerate in allowing me these time privileges.

I am pleased to report that I believe the following towns will have regularly organized Horticultural Societies in April next, as the Act provides: Rodney, Ridgetown, Dresden, Thamesville, Tilbury, Sarnia, and Leamington, they have already been organized temporarily, until April, by Dr. Bennett.

I do not believe in counting chickens before they are hatched, but I do feel reasonably sure, from the work already done, in each of these towns there will be organized a Horticultural Society in April.

C. A. Hesson: There are two outstanding points coming from these reports, which, if followed up and clinched, may lead to a bettering of the work of our Association. There seems to be a lack of knowledge on the part of some directors as to their duties. Can that not be overcome in some way? Could not the incoming President or Board be instructed to inform new directors as to what is expected of them. They then will go out and work with some knowledge and will report with some knowledge. We have had some reports that have been marvellously complete, but there are others that were not so satisfactory.

The Chairman: Last year there was considerable discussion with reference to our shade trees. I have had considerable correspondence with Mayor Carter, Guelph, last year in connection with the mutilation of shade trees. I have also had a communication from Kingsville and one or two other points complaining very bitterly about the condition of their shade trees after having been cut and pruned by some of our linemen.

This is a matter in which I have been very much interested. It was Mr. Sinclair who reported last year that the Hydro Electric people had some arrangement with the Government whereby they could cut back 10 feet. I suppose that was intended from the top, 10 feet, whereas they have been cutting 10 feet from the bottom. They came into our town. There was a beautiful row of trees on the south side of the street, just where we wanted shade, and they took off fully one-half of the one side of the trees, and there they stood until the extreme cutting decayed and rotted the trees, and they are now no more. It is really time, after the amount of labor and expense in connection with those trees, that we take some step in the direction of putting a stop to mutilation. When I went to Seaforth about twenty years ago we had no cattle laws, and we had cattle guards around every tree so that the cattle could not injure them. Now that we have those cattle by-laws, the guards are off. But the Hydro men come in and just murder our trees. Those men deliberately, in the spring of the year, climbed those trees with irons and lacerated the whole trunk of the tree until it was bleeding with sap. Those trees will die. It is high time we took steps in connection with this matter.

J. P. Jaffray, Galt: Does the Association want to go on record as being opposed to the Hydro-Electric going into towns and cities and putting their trunk lines in? It would be well to consider before passing a resolution. We got over that in Galt by providing in new additions to the city an alleyway. The poles and sewers are put in the alleys. The water was put in the alleys simply because we looked far enough ahead.

Then there is another possibility. Why do not some of these towns and cities put their wires in the ground? It costs money but, as a matter of fact, the property owner pays for it. The property owner in these thriving towns and cities must make up his mind to perform acts of that kind. We have a boulevard plan, 11 ft. inside, a walk 4 ft., then another boulevard outside that sidewalk, and that is where the poles or the stems of the lights are placed, the trees are put on the inside of the boulevard. We have had hundreds of trees put in in the last twenty years. We have not a single tree mutilated. We want power and light more than we want beautiful trees in some of the towns, and I do not take second place to anyone in connection with the tree line. Last year I got the Board of Trade in Galt to take up the tree question, and we put 1,000 trees in, partly at our own and partly at the property owners' expense. I would propose that we ask the Hydro Commission before they send their men in to do repair work and construction work, to notify the Council, to see if the trees can not be saved by putting the poles in a different section or the back part of lots. If you have the Commission do this, then the Mayor and Council can meet these men.

H. J. Moore: It seems to me that the solution of this trouble lies in the hands largely of the Ontario Horticultural Association. If any of us were going into business where we intended to spend large sums of money we would either handle that business ourselves or we would appoint the best and most efficient manager we could get to handle it for us. It is a question of saving the trees that are beautiful. The future will take care of itself, because there will then be legislation to take care of this. The Ontario Horticultural Association has the power in its hands this morning to ordain a way in which the trouble can be eliminated. The Government give grants amounting to $17,000 to be used, as I understand, by the individual Societies of this Association. To what purpose is it being used? Whose is the controlling mind that says such things shall be done and such shall not be done? In many cases, in the towns of the Province where Horticultural Societies exist, the money is not being wisely spent. Certain improvements are being effected and they are but temporary. Consequently these have to be done again a year or two later at a loss of 100 per cent. on the money expended.

Would it not be advisable to have a qualified trained landscape gardener, to advise the secretaries and presidents as to the best way to spend that money? When his plans have been passed upon they can go ahead. It is like a man building a house without a plan.

Now as to the care of trees. Suppose we had a qualified landscape architect appointed at a living wage—this man would be at your disposal. You would ask the secretary to send this man along, as the Hydro-Electric are coming in here to cut these trees. This particularly applies to the smaller towns. In the larger towns and cities where they have a park superintendent this is not necessary. This man could be sent to the various points to advise upon planting and pruning, etc., and when the men arrived he could say what can be done and what can not be done.

I note what this gentleman said about alleyways. That is a question for the future, and under the Town Planning Act of this Province that work of devising alleyways and entrances will be left to the Town Planning Commission.

I have drawn up the following resolution which I should like to bring forward when the resolutions are passed upon:

"Whereas the need of a trained landscape gardener is necessary to advise the various societies to successfully and efficiently carry out their work and to mature plans for same,

An Early Stage in Ornamental Planting.

"And whereas certain grants are placed at the disposal of the Ontario Horticultural Association,

"Be it resolved that this Convention request the Executive to appoint a qualified landscape architect, which appointment would result in greater efficiency and better results from the money expended in the work."

This was seconded by PROF. CROW from the O.A.C., Guelph, who said: It seems to me it is a matter of the greatest importance to Horticultural Societies everywhere, in fact, I can conceive of nothing which is more likely to stimulate activity and give us real results in Horticultural Society work. I can say from experience if a man were available to do this sort of work he would be able to cover a great deal of ground. We have been called upon very frequently to loan Prof. Tomlinson to towns, but our work is considered to be largely in the country, and for that reason we have had to pass the work aside. A man working in this capacity would be able to cover a great deal of work. If he cannot do the whole job, by all means let us have one for a start.

F. E. Buck: As an Association we should go on record as adopting a reasonable attitude toward the Hydro-Electric and the Bell Telephone Company. It is no good fighting big corporations like that. What we should do, as an organization in the Province of Ontario, is to put on record our opinion that things could be furthered better by requesting the Hydro Commission and the Bell Telephone Company to get into touch with some of our officials, to amend their legislation dealing with the trimming of trees. If we take that step we shall have no difficulty in following up with the appointment of a specialist such as we spoke of here. Mr. Adams, the Town Planning expert, has also suggested legislation along plans similar to that to which Mr. Jaffray of Galt has referred. Why not refer this matter to the committee which you appointed yesterday, and also if you wish, pass the resolution before the house to them, so that we could get somewhere in a business-like way.

H. J. Moore: There is no antagonism in what I said to the Hydro or the Bell Telephone Co. The suggestion was made that the Horticultural Association make the appointment of a landscape architect, and simply be a means to an end, and under the existing conditions would be acting in quite a friendly manner toward these Corporations, in that when they expect to go into a town they would simply say, "Gentlemen, you criticized our men in regard to mutilating your trees; what is your solution?" You would say, "Here is the solution." Legislation is a fine thing, but it will probably take some time to pass it.

An incident occurred in Niagara Falls where a Company ruined the trees on one side of the street. Now, I say, unless steps are taken at once to convince these Companies of our feelings in the matter, mutilation in the coming spring will be continued. We should have a man who is qualified to tell the Societies what should be done and what can be done.

H. B. Cowan: I understand that Mr. Thos. Adams has offered to give information regarding Landscape Gardening to any city that asks for it. He has offered it to Peterboro.

Wm. Hartry: In each small town and village where the Hydro or these other lines are run, they are erected and controlled by men of the town. The Hydro people do not send men from Toronto. The moment you say a word to them they will say they have the authority to do it from the Government.

A Delegate: Will not the laws of a town overrule that?

The Chairman: Apparently not; the Hydro say they have authority to cut back 10 feet.

Rev. Mr. MacKay: I believe the Hydro have more extensive latitude than the Bell Telephone. It is a matter of law enforcement. I remember up in the old home county, we boys planted trees on the old homestead and upon our solicitation the Bell Telephone Company finally moved the wires on the other side of the road until his neighbors' trees grew up. I don't know what they can do now. The Bell Telephone Company have under consideration in a great many places the grounding of their wires. We had one of their officials on our Civic Improvement, and he informed our Society to that effect. I do not think there is any time more opportune than the present that the Association could, by taking action, bring all the power in its control to bear upon these questions.

Dr. Bennett: We have a Hydro Commissioner a member of our local Executive. The other day he said, "If you get this expert we will give $600 per year towards looking after trees affected by wires, and put him in charge." That does not say there will not be any more destruction, but it is put under the care of a man who knows.

Mr. Thompson: I believe if you would go to the Hydro, sympathetically, you would get their assistance in getting this thing through, and in that way they would certainly be willing to co-operate with you. I move in addition to Mr. Moore's resolution that this Convention puts itself on record as favoring requesting the Hydro-Electric to consult the local authorities before locating their lines.

Mr. Ross seconded, adding as an amendment that the Government be asked to amend their legislation so that the Hydro would have to consult the municipal authorities before cutting into the trees.

A member here suggested that these resolutions be referred to the Committee on Resolutions. This was agreed to.

The Nomenclature Committee of last year, namely: H. J. Moore, F. E. Buck, P. H. Mitchell, Prof. Macoun, Wm. Hunt, O. J. Robb, Wm. Herrick, L. C. Crombie were reappointed.

REPORT OF THE COMMITTEE ON HYBRIDIZING AND EXPERIMENTATION ELECTED AT THE CONVENTION IN FEBRUARY, 1919.

Personnel: Miss Mary Yates, Convener, Miss M. E. Blacklock, Mr. Frank S. Wood, Mr. J. C. Crombie.

All members agreed that the time is ripe for a movement in the direction of the establishment of a location in which the interests of horticulture shall have primary consideration.

The general situation has been examined and it has transpired that kindred organizations are considering similar projects.

The Botanical Department of Toronto University has already taken steps to present plans for a co-operative botanical garden which shall serve the Province to begin with and shall later form a working model for the growing communities as they are able to undertake such work.

The Rose Society of Ontario has actively been engaged in the attempt to secure a site for trial rose gardens. Their objective has not been entirely successful and as a society they are willing to consider co-operation in a wider scheme.

The Vegetable Growers' Association have a project which entails the securing of a site of from eleven to twenty-five acres and plans have been worked out to carry on experiments of a high order of value.

There are two lines, at least, open to us for consideration—

(1). We can offer to co-operate with these organizations in regard to a comprehensive provincial plan.

(2). Our own Association, it will be remembered has over a hundred branches and twenty thousand paid-up members. Many of these branches feel that the Association should take the initiative and give the invitation to the kindred organizations to take interest in the special areas connected with their own definite lines of work.

It is quite clear that enough interest exists to warrant a definite appeal to all branches to discuss this matter of Experimentation and Trial Grounds fully at their regular meetings. Suggestions to be asked for—(1). As to the form such work shall take, etc. (2). The possible means of financing such a plan.

One enterprising statement made was to the effect that model farms have been in order of practical politics for some time, therefore why not a model small holding or group of such holdings, a model village in fact. The branch making this statement recommended that plans might be asked for by the esteemed Mr. Adams, the village planning expert for the Federal Government. In buildings on such premises, the necessary verbal instruction should be given for the training of gardeners that is so badly needed, and for the showing of flowers. The practical work would be provided in great variety in such a place.

In view of the facts revealed the committee begs to recommend the formation of a standing committee to consider the situation more fully and to bring the idea of experimental gardens to the forefront of progressive work in the Association.

EXPERIMENTAL GROUNDS.

PROF. R. B. THOMSON, TORONTO UNIVERSITY.

When Miss Yates asked me some time since to open the discussion on Experimental Grounds, she referred to the offer that I had made some time ago to allow the use of the University greenhouses to members of the Association for experimental purposes. Perhaps you have heard it stated that the poor are the most generous givers. Certainly the offer savoured very much of the "sharing our poverty with you." The intention was good, however, and when we do succeed in getting an adequate equipment it will give us the greater pleasure to continue that offer. In this regard you will be pleased to know that a home for Botany stands first on the University's list of new buildings. In these buildings I hope you will find room and a cordial welcome for such meetings as this. The buildings and equipment as proposed will provide for Forestry as well as Botany, and the present intention is that they occupy the northern portion of the block opposite the General Hospital with greenhouses to the south, and gardens in the centre of the block, opening into College Street. Thus outfitted, not only will the teaching of Botany be facilitated, but public outward recognition given the subject. This is good, but it is not sufficient to meet the needs of the situation.

Mr. Groves drew your attention yesterday to the need of facilities for the training of gardeners. This need is one from which no one has suffered more than we. We started a small Botanic garden south of our present building about ten years ago, and succeeded in getting some 3,000 native and exotic species to grow, but this number is but a tithe of those that fell by the way—sacrificed to the hoe of the ignorant workman or to his lack of knowledge of the proper methods of cultivation. We need then just as much as you do trained gardeners. Our young men and women also who come to the University for Botany courses ought to have an opportunity to learn how to grow plants. Any work they do in plant breeding demands this. Our mutual necessity is *"A training ground for Gardeners."*

This country is woefully lacking in such facilities. Even the Old Country apprentice system is not to any extent in vogue here. Perhaps, it is just as well, since such a system might only delay the day of the definite institution, the School of Gardening, or whatever you may call it, that is bound to come in Horticulture as it has in other crafts. Perhaps, some may demur at the sweeping character of my statement with regard to training facilities in this country, and point shall I say to the *possibilities* at Ottawa and to the *reality* at Guelph. I say *possibilities* at Ottawa for the men and the means are there, but alas the constitution of this Dominion of ours, whether for better or for worse, has put the onus of education on the Provincial Governments and does not permit the Dominion a say in the matter. Ottawa is thus out of consideration in any scheme of Education of Gardeners.

A Useful and Ornamental Gateway.

Now what of the Department of Horticulture at O. A. C.? This Department is working under difficulties which no one appreciates more fully than I, except perhaps the members of that staff themselves. They are making praiseworthy and heroic efforts, but the question always comes up:—Why don't we see the results in the trained gardeners they are turning out? Why is it that when a position as gardener is advertised so few men apply, and why is it that of the few that do, nearly all are Old Country trained men?

I shall state plainly what I think is the trouble, and in the candid exchange of views that will follow, I am hopeful that something vital will be disclosed. I naturally agree with the findings of the Educational Committee of the C. H. A. (being privileged to be one of its members), those findings which were put before you so ably yesterday by the Secretary, Mr. Groves. I agree that Horticulture should be recognized as a craft of itself, apart from Agriculture. I further hold that though Agriculture is the fundamental industry of this country, and as such worthy of your heartiest support, yet Horticulture is the handmaiden of culture and civilization; and must round out not only the life in the home on the farm, but also that in the home of the great urban centres. I am aware that I am not saying anything new to you, yet, perhaps, something new in this new country. Bacon voiced the same idea in the old world long ago. His words are: "God Almighty first planted a garden; and indeed it is the purest of human pleasures. It gives the greatest refreshment to the spirits of man, without which buildings and palaces are but gross handiworks. And a man shall ever see, that when ages grow to civility and elegancy, men come to build stately, sooner than to garden finely; as if gardening were the greater perfection."

Horticulture, then, which has so much to do with the *home beautiful,* and with the furtherance of civilization, should receive broader reecognition than that accorded to it as an adjunct, and perhaps a none too honored one, of an Agricultural College. Since Horticulture pertains to the beautification, I was going to say beatification of the home, why not provide facilities for instruction in this great art in great centres of homes? Why not give a chance of such training to the men, women, and especially the children of the city, as well as to those of the country. That is why Guelph to-day is not fulfilling the needs of modern Horticulture, not because of her staff, and not primarily because of her equipment or lack of equipment, but primarily and fundamentally because she is separated from the great body of those whom she would serve, whose sympathy and co-operation are essential to her success. Nor must I be misunderstood. In saying this I am not speaking against Horticulture for the country, and the beautification of the farm home. Far from it, let "Guelphs" be multiplied throughout the country, and their benign influence recognized, but why on this account deprive the city dweller of the benefit? Why send him away to the country to learn to garden in the city? Why not provide the facilities where many more can partake and enjoy the benefits of them? I noted with pleasure your Secretary's statement in the press last night, that the society was looking for some "Central Experimental Grounds." That word "central" spoke to me of the marshalling of sympathies and of co-operation—features which are imperative to success.

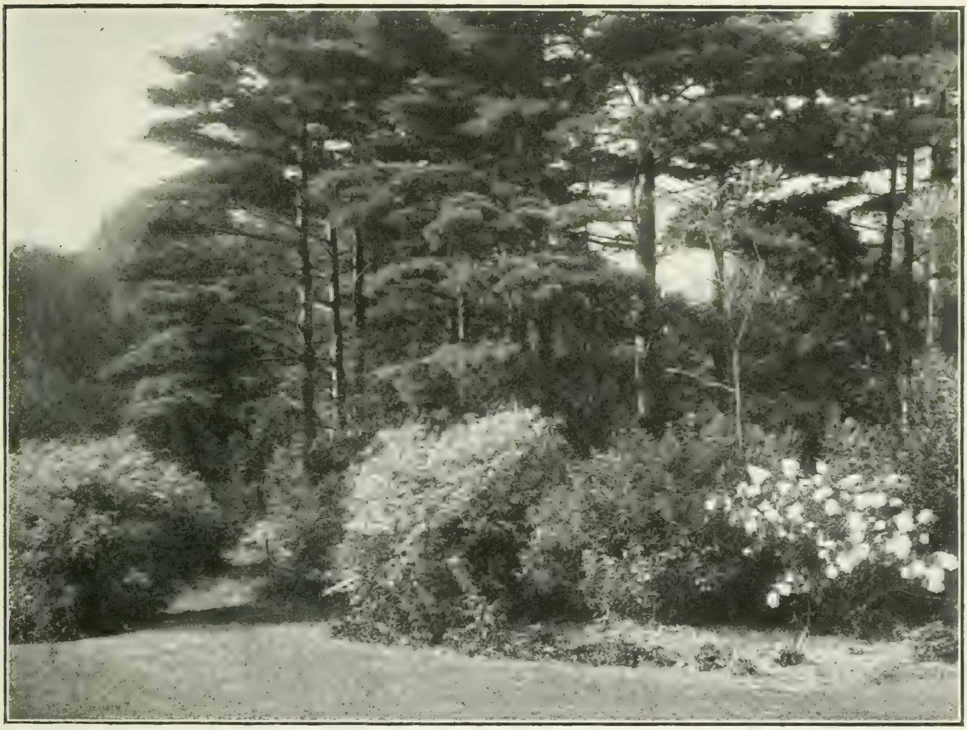
If Toronto were made that "centre" a vital connection could also be established between Horticulture and her basal science Botany in the University, with mutual advantage to both. The University needs a Botanic garden, so that she may have not only the necessary plant materials at hand, but also facilities for carrying on experimental work in plant breeding, plant diseases, plant growth, etc. Would it strike this Association that co-operation with the University might be advantageous? Certainly the University often deplores the distance that separates her from Guelph and would welcome a reunion. Perhaps your aid may be the very factor that is needed to bring about at least a reunion so far as Horticulture is concerned. The war has taught us how closely in many ways, pure science and applied are related, and how dependent one is on the other. May the lesson not be lost in this the reconstruction period.

We have a scheme on foot for the establishment of a garden here, and if it comes out in the discussion to follow that it would be advantageous for the O. H. A. to have its Experimental Grounds in that garden, all I can say is that you will be made very welcome, and given an opportunity to help in the realization of the scheme.

REPORT OF COMMITTEE ON RESOLUTIONS.

Dr. F. E. Bennett, of St. Thomas, the Chairman of the Committee, submitted the following resolutions, moved and seconded by members of the Committee, as given respectively:

Moved by H. J. Moore, Niagara Falls, seconded by W. J. Evans, Toronto, "Whereas the need of qualified Judges is apparent at Horticultural Exhibitions throughout the Province, and whereas the appointment of expert judges would do much to further the cause of horticultural education, be it resolved that this Executive appoint a committee to select such judges to be placed at the service of the various societies to establish and maintain a standard of uniformity which shall be recognized by the Association and to which exhibitors must conform.'" Carried.



Border with Background of Stately Pines.

Moved by F. E. Bennett, seconded by James E. Brown, "That the sum allowed each delegate for expenses incurred attending the Annual Meeting of the American Civic Association be $50." Carried.

Moved by G. H. M. Baker, seconded by W. E. Saunders, "That this Convention feels that it would be to the interest of horticulture that a new cover design be prepared for the Annual Report of the Horticultural Societies and that the Minister of Agriculture is hereby requested to carry out this proposition." Carried.

Moved by Mr. Pearen, seconded by W. E. Saunders: "That the opinion of the Convention is that the interest of horticulture would be greatly advantaged by having a set or sets of lantern slides relating to progress in horticulture, and to that end would request that a sum of money be set aside for this purpose, to be expended under the direction of the Executive of this Association. Carried.

Moved by D. H. M. BAKER, seconded by J. E. BROWN, "That in view of the increased work of the Horticultural Societies and the ever increasing membership, that this Convention deems it advisable to urge upon the Minister of Agriculture the desirability of having the Legislative Grant increased by $10,000." Carried.

Moved by W. E. SAUNDERS, seconded by FRANK RODEN, "That this Convention of the Ontario Horticultural Association views with apprehension and alarm the annual and persistent destruction of insectivorous and other birds, particularly during the breeding season, by persons who carry guns into the country with no intention of using them in any but an illegal way.

"And that this Convention would and does hereby urge upon the Government of Ontario the advisability of passing legislation at an early date, to prevent all carrying and using of guns upon the highways and by trespassers on private property between the first of April and the first of September, thereby protecting our beautiful and useful insectivorous birds during the breeding season. Such legislation would not interfere with the use of the farmers gun to protect his crop from crows, sparrows and other birds, such as are occasional depredators, but would prevent irresponsible trespassers from roaming over farms and killing any of these volunteers who devote a fourteen hour day to the destruction of the enemies of horticulture and agriculture. And that a fully equipped force of men be appointed for the enforcement of such legislation.

"And further, in view of the fact that immigrants from Central Europe compose a large proportion of the ruthless destroyers of wild life, this Convention would urge that no alien be permitted to own or carry firearms.

"And that a copy of this resolution be forwarded by the Secretary to the Premier and to each member of the Cabinet of the Provincial Government." Carried.

Moved by W. E. SAUNDERS, seconded by DR. BENNETT, "That this Convention desires to express its appreciation of the work done by Mr. Jack Miner, at Kingsville, among the Wild Canada Geese and other birds, and to heartily commend and approve of the encouragement and assistance given to him by the Government; and in view of the widespread interest taken in his work and its valuable effect upon the attitude of the citizens of Ontario towards bird life, in this connection would urge the continuance and, if possible, the increase of such aid and recognition as has been given him by the Ontario Government." Carried.

Moved by F. E. BENNETT, seconded by W. E. SAUNDERS, "That the thanks of this Convention be and hereby are tendered to Jack Miner for his kindness in giving such an interesting, instructive and thoughtful address at its evening session." Carried.

Moved by F. E. BENNETT, seconded by JOS. BROWN, "That the formal thanks of this Convention be and hereby are tendered to the Toronto Horticultural Society for their kindness in making it possible for the members to lunch together in social harmony, thereby contributing to the enjoyment of the members as individuals in a marked degree. That copies of the foregoing resolutions be forwarded by the Secretary to this Society to the persons named and concerned." Carried.

Moved by F. E. BENNETT, seconded by JOS. BROWN, "That the affiliation fee of this Association shall hereafter be $2 for the first two hundred members or less, and $1 for each additional one hundred or portion thereof up to one thousand members, as shown by the last Departmental Report." Carried.

Moved by J. M. PEAREN, seconded by W. E. SAUNDERS, "That whereas a well developed horticulture is recognized as essential to the welfare and prosperity of Canadian home life, and whereas, "Horticulture is a definite craft in itself and is not a branch or department of Agriculture, and consists of the more intensive cultivation of fruits, flowers, vegetables and ornamental plants," and whereas there is a great shortage in Canada of trained Horticulturists, and whereas Scientific Research in Plant Physiology, Plant Pathology and Entomology is of vital importance to the future development of Horticulture in Canada, and whereas Systematic Plant Improvement and Plant Introduction are likewise of fundamental importance to the future of Canadian Horticulture; therefore be it resolved that this committee recommends the establishment of special facilities for the practical and scientific training of men in Horticulture, and further recommends that all Horticultural and kindred organizations in Canada be requested to appoint representatives to a Canadian Council of Horticulture with a view of formulating plans for the adequate development of horticultural interests in Canada as outlined herein." Carried.

Moved by G. H. M. BAKER, seconded by T. D. DOCKRAY, "That this Convention has heard with great regret of the death of our worthy member and ex-director of this Association, the late Walter T. Ross, Picton, who did so much in the field of Horticulture, especially of Tropical Plants, and wish to express their deep sympathy to his family, and that the Secretary be instructed to forward a copy of this resolution to the family." Carried.

Moved by J. M. PEAREN, seconded by T. D. DOCKRAY, "That the President and 1st and 2nd Vice-Presidents be a special committee having power to name certain standing committees of this Association and appoint the Chairman of same." Carried.

Moved by F. E. BENNETT, seconded by J. M. PEAREN, "That we recommend that the Executive take into consideration the advisability of holding a banquet in lieu of the present evening session of the first day of the Convention, and also recommend that the Executive supply each Society with programmes of the Annual Convention at the same time that the certificates are sent out for the appointment of delegates, and also that each Society be furnished with sufficient programmes for each delegate that they are entitled to send." Carried.

Moved by JAS. WALLACE, seconded by W. E. SAUNDERS, "That this Convention of the Ontario Horticultural Association desires to place itself on record as opposed to the freedom given to that imported marauder and destroyer of wild life, the cat, falsely called domestic.

"The majority of these animals in Canada are half or wholly wild, and make their living as much as possible, from our native birds and from that fact, only, have earned the right to speedy extinction.

"To the end that their number be curtailed, this Convention desires to and hereby urges the Provincial Government to pass legislation providing that all owners of cats shall pay an annual tax which shall be somewhat greater than the similar tax on dogs, and that the duty of collecting the tax be placed on the shoulders of some appropriate department in each municipality.

"And that a copy of this resolution be forwarded by the Secretary to the Premier and to each member of the Provincial Cabinet of the Government of Ontario." Lost.

In connection with the resolution *re* the slides, Mr. Wilson informed the convention that the Department had arranged for the ones that Miss Yates showed, which Miss Blacklock had kindly painted for the Department.

Mr. Jaffray, of Galt, asked if these would go outside, also if outside societies might send in any pictures. He said they had a wonderfully beautiful cemetery at Galt, which would be an inspiration to other societies in improving their cemetery surroundings.

Dr. Bennett said that was the idea—that members of the Association submit any pictures which seem attractive to them, also he thought each society should have a lantern, one cost about $40, he thought.

The thanks of the convention were tendered to Sir John Eaton for the beautiful flowers loaned for decorating the hall.

It was moved by Mr. Glassford, seconded by Rev. Dr. Scott: " That we appreciate the work of the Canadian Horticulturist and would recommend that it receive our hearty support." Carried.

H. B. Cowan: I thank you very heartily for that resolution. I am glad to see this Association growing. I think we are ready for a forward movement and I would like to see the same progress in the next ten years as we have had in the last. You passed a resolution to-day favoring an increase in the grant. Why should not this Association as an Association favor a direct grant like the Fruit Growers and the Vegetable Growers have. You have policies before you that you would like to see carried out. Your directors should be able to meet three or four times a year, as often as you see necessary to plan policies and see that they are carried out. That is one of the first steps that I think you have to carry out.

Dr. Bennett commended the splendid work that Miss Wilson, the correspondent for the *Farmers' Advocate* had done for the yearly conventions and the good report which the *Advocate* had always given of the Association's Conventions.

J. Lockie Wilson: I move that the hearty thanks of this convention be tendered to Miss Wilson, the correspondent for the *Farmers' Advocate,* and that we wish also to thank the *Advocate* for the splendid reports they have given us in the past.

Dr. Bennett seconded, and it was unanimously carried.

Miss Wilson: I am glad if we can help in any way the horticultural interests, and also the work of vegetable growing. I was quite in accord with what Prof. MacLennan said about vegetables.

Prof. Crow: We are all interested very keenly in the development of Horticulture in Canada. I wonder sometimes whether we as members of this Association and as members of the Ontario Horticultural Societies realize our influence. Amateur horticulture is the important end of horticulture. What I mean by that is that without the amateur horticulturist, we should not have the other, and also that when you size it up, the important horticultural interests of amateurs mean just as much, if not more, than other horticultural interests. They may not mean so much in dollars and cents, but Great Britain, to-day would not be where she is without British horticulture. The Englishman, particularly, has given to the world what is recognized the world over as the model of the home, and not the least feature about the Englishman's home is the horticultural end of it—his trees, his shrubs and flowers. We are commencing in Canada to realize something of what home life may mean. We are coming to realize something of the importance of home life and of seeing to it that our home life is

Neatly Kept Lawn.

lived under proper surroundings. I am not ashamed, nor I imagine are you, to stand on a public platform and plead for the cult of beauty. Without it we should be inferior, degraded, and I submit it is only as we cultivate character and love beauty that we develop in our homes the type of individual that we wish to see in our country.

Now with regard to horticulture, it seems to me that the difficulty is this: We take ourselves at a low valuation, and we certainly allow other people to take us at a low valuation. I feel that the things that we stand for are important, but we certainly do allow people to under-estimate those things, and possibly our problem is nothing more or less than the problem of bringing to the attention of the Canadian people at large the importance of horticulture and its significance to the body politic.

I feel that the first thing we should stress is the distinction which I believe exists between horticulture and agriculture. Horticulture, in our organizations, all the way through, academic and legislative, has been considered a part of agriculture. I have been told for example that my work at the college should be to devote myself to those phases of horticulture which are of interest to the farmers of the Province. I have never been able to bring myself to believe that that is my sole duty, because I realize a sense of responsibility to the lovers of the ornamental. This organization itself does not stand for rural horticulture, and I believe this organization has within it the greatest potential for good of any organization we have in Canada. The Horticultural Association is the subject of envy to our neighbors to the south. I have been in close touch with the American Pomological Society, which is the oldest Horticultural Society, and the American Horticultural Society, and I would say to you they hold up the Ontario Horticultural Association as a model. I have heard no less a person than Dr. Bailey hold up to the Pomological Society the Ontario Horticultural Association. They have nothing like the organization of Horticultural interests that we have in this country. We have a working force which ought to mean a great deal.

The things we need in Canadian Horticulture are these: First a Training School in Horticulture. We have nothing in Canada at the present time which is making any real effort in that connection at all. Guelph cannot possibly turn out trained gardeners. We have neither the facilities nor the opportunity. We need a school for the training of gardeners that is recognized by vegetable growers, gardeners, fruit growers and amateur gardeners, such as yourselves. Invariably, it is the thing they speak of in connection with Guelph. We need, of course, an institution which will train men for more advanced work. We need also to take up seriously the matter of developing better varieties, because we are now able to command some of the scientific knowledge, perhaps, made available with regard to the breeding of plants. There is untold wealth to be created by our own hands. Look at the work of H. J. Moore, a pioneer, a man to whom we should all give credit. Those men are the forerunners of numbers of men who will come from the ranks of the amateur. You can not depend upon Government stations to do that sort of work entirely.

Then the next thing we need is to get hold of plant material, whether it is grown in our country or produced from outside. We have at the present time no adequate means for distributing that sort of plant material, and those are the problems which concern us immediately. I am delighted with the spirit of revived interest which is evidenced in this Association. This Association has before it a wonderful opportunity. You have my very best wishes for success.

Dr. Bennett brought up the matter of the loss by death of the late J. Y. Smiley, who had been a member of the Association. It was moved by him, seconded and carried. "That a resolution of condolence and sympathy be forwarded by the secretary to the late Mr. Smiley's family."

BEST CLASS OF PREMIUMS AND WHERE THEY CAN BE OBTAINED.

Dr. F. E. Bennett, St. Thomas.

It affords me great pleasure to speak upon the subject of premiums or options for members of Horticultural Societies for upon this feature of the Society's work depends much of their success or failure, not that the ideal member seeks to get two dollars worth for his one dollar membership fee, but the fact that each member receives nursery stock means that much more additional planting in his or her municipality. Therefore in selecting premiums encourage the more permanent plantings such as shrubbery, roses, vines, perennials and hardy bulbs. Shrubbery and vines probably come first in point of hardiness and require the least attention. Some of the well-known shrubs to select are the Spiræa, Weigelia, Hydrangea, Japan Barberry, Viburnums, Loncera, etc., some doing the double duty of producing bloom and later berries, the latter providing food during the winter for our native birds, but there is no reason why the rarer shrubs and ornamentals and the newer varieties of the shrubs just mentioned a moment ago should not be offered as premiums. It might be interesting to mention a part of the list selected for the members of the St. Thomas Society for 1920. The old fashioned lilac heads the list, but with new names, the latter creations, such as Hugo Koster, Ludwig Spaeth, President Grevy, Congo, Michael Buchner, Marie Legraye, Madam Lemoine, and Rothomagensis giving us a wide range of color and with different shaped trusses. In flowering Dogwood, Cornus Sanguinea Amea Elegans, Marginata, and Spathi; In Philadelphus (mock orange) Grandiflora, Mt. Blanc, Coronarius Flora Pleno and Coronarius Aurea: Rhus or Purple Fringe; Spiræa A Waterer, Prunifolia and Von Houttei; Tamarix, Viburnum Carlesi and Rhytidophyllium, the latter being an evergreen variety, and the Altheas which are fairly hardy with light protection in Southern Ontario. We also included a short list of Conifers, which brighten up the landscape and add color in winter. Abies Concolor, Juniper Virginiana Glauca and Pfitjeriana, Koster's Blue Spruce, Taxus Cuspidata and Brevifolia. Among the less hardy varieties, some of which are very decorative are the Magnolias, Aucuba Japonicas (Gold Dust trees) which require housing in winter, Acer the Jap Maples with their blood red foliage, Buddeya Magnifica or Butterfly bush, Kalmia (the mountain Laurel) the Boxwoods as pyramidals or globe shaped, and Bay trees; but I must not leave out the beautiful flowering crabs and thorns, Crataegus, Wm. Paul, Bethel's Flowering Crab and Malus Parkmanii and Scheideceri.

In climbing vines, the Boston Ivy, Dutchman's Pipe, the hardy Clematis Paniculata and the less hardy but more showy Jackmanii (Purple), Ville de Lyon (carmine) Lazenstern, Skyblue, and Madam Le Coultre, White, and lastly the Euonymus Radicans and Evergreen Climber. In roses the Rugosa Conrad Meyer and Rosa Hansa are especially hardy, flowering profusely, are mildew proof and particularly adapted for specimens. For bedding purposes the Polyanthus or Baby Ramblers are splendid, flowering continuously throughout the season and are not subject to the ills of the Hybrid Teas, Jessie, Ellen Poulson, Anna Teschendorff and Fred J. Grootendorst being the leaders. In climbers, Dorothy Perkins, Crimson Ramblers and Tauschendon are well known. Next in hardiness I would place the Hybrid Perpetuals and lastly, the Hybrid Teas. I will not attempt to enumerate the varieties as that would consume a whole evening's time. There is one warning note to sound in connection with roses as premiums, and that is their proper care. Many are susceptible to mildew, or to black spot and all to insects. All require great care in cultivation, in fertilizing, in watering and in spraying if results are wanted, otherwise failure will result, causing dampened enthusiasm on the part of many members. Perennials are again becoming popular. They are ideal gifts for when once planted they are permanent. This, to a certain extent, is not exactly true for they require to be dug up at periods and subdivided and replanted. With care in selection a premium can be selected that would give continuity of bloom throughout the season. A great many of the Perennials offered by Societies could be grown locally from seed or bought as small plants and developed in a trial ground owned by the Society or arrangements could be made with a gardener to grow them on a percentage basis. By this method they can be dug fresh and sent out the same day without danger of loss from drying out. Pæonies make a very desirable option, withstand frost, require little care in boxing and can stand a long journey with apparently little evil results.

Bungalow on the Mississauga Road.

The hardy bulbs deserve a place on any good option list. Our Society has for years specialized in Tulips and other fall bulbs, the Tulip being our city flower, some 150 varieties being listed. The spring flowering bulbs are so welcome, forming a connecting link between the winter and early spring planted, as they are in groups amongst the shrubbery or in beds by themselves. Bulbs are easily handled, easily planted and require practically no attention, and with shipping conditions getting back to normal the great drawback is practically eliminated. No special quarters are required for their housing. The same can be said of Gladioli, which also make ideal premiums for shipping and handling. As a cut flower it is ideal, especially for its lasting qualities, and looks fine when planted as clumps in shrubbery. Our Society has made a reputation of late in its range of varieties of this popular flower, winning the silver and bronze medals (non professional) at the 1919 Annual Exhibit of the American Gladiolus Association Show at Detroit. This year we are listing some 200 kinds, the majority being Kunderd's own creations, Dieners, Mrs. Austin, Dr. Hoig's, Groffs and Holland stock.

In all the options, our members are allowed to select to the value of $1 and any additional stock wanted can be secured at prices quoted.

You will notice that I referred to the easy handling of bulbs which make them ideal in that respect, but on the other hand, this is offset by their short blooming and foliage season, and having to be stored either in summer or winter. Shrubbery vines and roses, on the other hand, are permanently planted, but the difficulties of transportation and handling is an important problem, many shipments being destroyed or badly damaged, through delays by strikes, customs' red tape, or fumigation,—the latter two delays pertaining to foreign shipments only. Then upon opening a consignment it is absolutely necessary to have proper facilities for storing to prevent the roots drying up. A shed with bins of mossing up is required, or land in which they can be trenched. Unless a Society has the proper placé to store them it is better to eliminate them as options or buy them all ready done up in individual options and properly mossed ready to deliver. This latter course is not only costly but rather unworkable.

There are, however, more troubles than storing and shipping and that is where to buy and buy right. To me this is the greatest problem, and especially to the smaller Societies, and then again the constant change of officers from year to year with an uncertainty about the number of members. No Society organizing in January can go into the open market and buy any kind of decent selection for spring delivery except through a public or local agent who has to have his profit. The more hands it passes through the higher the price. Let me instance the case of our own Society. In the latter part of last June I placed an order with a Boskoop firm's traveller for some 3,600 roses and 2,500 shrubs. This was the last order for spring 1920 delivery that he would take and guarantee buyer's selection. Then the same condition exists in Gladioli. I found many U.S. firms with S.R.O. signs out away back in late October. I refer particularly to the newer creations. Some firms are even refusing spring orders in many lines. Perennials and fall bulbs are seemingly easily procured at any time.

Now comes the question where to buy to advantage. As I mentioned before, the small societies are handicapped. They should buy a fairly wide range of offerings, which necessitates buying in small quantities at a disadvantageous price, an order whch very few growers will bother with, consequently I think I am safe in saying that very few Societies get really wholesale rates. This is unfortunate. I know for a fact that many Ontario nursery men refuse to quote except at almost retail prices to Horticultural Societies, but give very special rates to agents and small dealers. This is unfortunate and, in our case, has forced us to go overseas or to the United States. It seems to me an opportune time for the Ontario

Societies to advocate a central buying agency where nursery stocks could be bought in a large way at favorable prices and thus give the benefit of the middlemen's profit directly to our members, and thus more than ever popularize the movement. The Programme Committee have asked me " where to buy." That's a big subject, but I will answer it in a general way. Around Boskoop, Holland, seems to centre the shrubbery growing, though France produced vast quantities of lining out stock. Holland seems to have the bulk of the fall bulbs too, this industry being centred around Haarlem. Gladioli growing is rapidly developing in the United States, especially in Michigan where Holland firms are locating due to the plant embargo, but prices at present are very high owing to scarcity of stock.

There is a great field in Canada for the development of the nursery industry, especially in Southern Ontario, between the Niagara and Detroit Rivers, and I hope the day is not far off when nursery stock labelled " Grown in Canada " will be offered to our organizations at prices as low as foreign quotations. There are many points in this address that have been overlooked for lack of time, but I hope for a full discussion with its accompanying benefits.

Street Corner in Wallaceburg.

H. A. Middleton: We are very grateful to the Doctor for his very helpful paper. I know the same difficulty exists with many of your Societies as with our own. The usual dealer is ready enough to take our money but he does not care much what he gives us. We tried our local florist to sell us asters this year, and our members all reported the worst asters they ever had. We have in our community a species of retired farmers who are out for all they can get. Now the doctor said that in this list given out this spring that they can make a selection to the extent of $1. Why, we would not have anything left for the fall. Does the doctor mean to say that that dollar allows them both a spring and fall selection.

We have a young Society in our neighborhood, at Fenelon Falls, which I am pleased to say is growing with leaps and bounds.

I would ask him to explain to us how he can give $1 worth in the spring to a member who pays $1 for his membership, when he expects something in the fall as well.

DR. BENNETT: If we make delivery in the spring that means one at cost. If we have another to make in the fall, we divide the premium, and they do not get much of anything. They must state their option, and if they do not they get the spring stuff and we get rid of it. We did not have 100 fall options this year, and we know how to order accordingly. If they did not like it, it was their fault, if they sent in their request. Anything they want in the fall in bulbs, etc., they usually buy outright.

DR. SCOTT: Where do you get your Spiræas for St. Thomas?

DR. BENNETT: What we have to date we had to get in Holland. We have special wholesale arrangements with a firm and unfortunately they will not extend them.

SCHOOL GARDENS.

JOHN G. MCDONALD, AURORA.

It is a recognized principle that we learn to do by doing. So in school gardening nothing will awaken an interest in this subject so much as getting to work at it. The teacher who is interested in this subject and awakens an interest in his pupils has opened a large field for experiment. It is a centre from which he can get in contact with otherwise unapproachable pupils. The teacher dressed in old clothes with hoe or spade in hand appears in a different role. He is more on a level with his pupils and together they investigate the hidden mysteries of nature. The subject also suggests problems, in practical arithmetic and composition. To illustrate, the pupil measures his plot, estimates the amount of seed required and after harvesting, reckons the gain on a hundred acre farm at the same rate. Problems in per cent. may also be obtained in the same way. Compositions may be written on different phases of the school garden work.

I believe the best way I can approach this subject is to tell you what we in Aurora have done along this line. The Aurora Horticultural Society became much interested in this subject from the first and put great stress on the work The first year we interested the pupils in home gardens and had a fair in the fall. We found that this plan was not altogether satisfactory, owing to the fact that some pupils worked under the disadvantage of poorly fertilized plots. Last year we procured a section of ground suitable for the work and divided it into seventy-two plots. This plan was quite successful. We procured seed for the pupils and grew our own tomato plants in window boxes in the school room. This was a practical lesson on plant growing. The plants developed well, and each pupil got six for his plot. The pupils were taught the proper method of staking the plants, and a good opportunity of seeing the benefits of staking was given, for some of the pupils neglected doing this. The plots contained onions, beets, carrots, parsnips, potatoes, and tomatoes, with a row for flowers. The results I may say were altogether satisfactory. It wakened a real community interest in our town and many citizens found it a pleasure to walk around and visit the school gardens. In the fall we had a fair at which the product from the plots was on exhibition. Special prizes were also given for aeroplanes, bird houses, kites, and home baking. To add still more interest, the afternoon of the fair we had a field day of sports for the pupils to which citizens received a general invitation and manifested their interest by attending in large numbers.

The success of the work is due largely to the ladies and gentlemen who assisted materially in the organization and labor connected with it. Let us aim to have a school garden in every town and village and thereby train our pupils to see that there is nothing mean or low in tilling the soil, and by so doing we will provide for the future men and women of Ontario a real recreation which will better fit them to face the problems of life from day to day.

Moved by W. E. GROVES, seconded by A. GILCHRIST, "That this Convention of the Ontario Horticultural Association puts itself on record as favoring cooperation with the University of Toronto in the effort to secure a Botanic Garden in the city of Toronto, where experimental grounds would be available; and to this end instructs its President to name a committee to co-operate with the University Committee, having the matter in charge." Carried.

After the singing of the National Anthem the delegates repaired to Sir Edmund Osler's to see his greenhouses.

STATEMENT OF MEMBERSHIP AND LEGISLATIVE GRANTS FOR 1918-20.

Societies.	Expenditure in 1919, on which grant for 1920 is based.	Membership.		Legislative grants.		
		1918	1919	1918	1919	1920
	$ c.			$	$	$
Acton	246 79	120	108	75	76	76
Agincourt	138 00	56	83	56	40	47
Alvinston	95 75	63	90	49	55	41
Amherstburg	310 05	51	113	124	95	90
Aurora (organized in 1919)	346 78	82	107	....	75	95
Aylmer	737 49	99	119	125	151	178
Barrie	376 74	112	175	151	120	119
Belleville	205 65	111	114	80	89	69
Blenheim & Harwich	466 96	99	107	139	87	120
Bothwell (organized in 1919)	95 81	63	63	....	63	34
Bowmanville	138 75	67	68	70	54	44
Brampton	269 53	154	134	180	125	87
Brantford	1,696 58	345	1,012	545	294	594
Brussels	193 31	87	87	80	66	59
Carleton Place	488 36	165	148	176	146	135
Chatham	4,598 18	518	767	800	800	800
Chesterville	204 88	90	96	....	75	65
Clifford	845 52	141	164	229	236	212
Clinton	754 14	236	325	192	176	233
Cobourg	120 80	60	77	49	40	43
Dundas	286 09	112	108	171	111	84
Durham	168 62	51	66	50	46	49
Dutton and Dunwich	414 64	85	123	75	112	112
Elmira	193 00	69	77	74	68	57
Elora & Salem	434 56	92	96	123	106	111
Essex	344 73	121	90	99	154	91
Fenelon Falls (organized in 1919)	109 08	102	102	....	75	46
Fergus	159 10	85	92	75	62	54
Fort William	427 37	139	235	142	112	145
Galt	531 17	231	334	263	235	190
Goderich	285 21	129	127	115	107	88
Grimsby	140 56	75	72	47	54	46
Guelph	2,075 10	490	1,096	378	517	692
Haileybury	281 68	100	101	141	111	81
Hamilton	1,525 49	608	842	456	450	515
Hanover	718 62	201	287	221	136	216
Hespeler	364 01	120	132	78	121	106
High Park	711 22	280	346	114	227	230
Hillsburg	296 88	50	67	104	21	75
Ingersoll	1,594 77	169	177	259	366	364
Iroquois (organized in 1919)	234 00	101	106	....	75	72
Kingsville	792 26	103	119	151	198	189
Kitchener	1,097 72	392	349	324	378	326
Lindsay	1,461 57	284	238	200	270	353
Listowel	300 29	65	65	69	47	76
London	2,622 16	1,100	1,604	436	761	800
Milton	214 25	88	121	81	62	72
Mitchell	136 51	123	88	106	101	49
Morrisburg	983 34	88	191	75	108	245
Napanee	150 30	63	63	60	51	45
Newcastle	165 67	78	79	47	72	52
New Hamburg (organized in 1919)	120 89	54	54	....	54	37
New Toronto " "	534 57	92	101	....	75	133
Niagara Falls	1,368 02	234	708	75	149	453
Orangeville	398 93	139	67	131	149	96
Orillia	257 15	102	118	88	76	80
Oshawa	253 55	99	132	100	75	83
Ottawa	3,058 72	1,300	1,523	800	800	800
Owen Sound	720 77	171	237	192	197	205
Paris	759 49	304	323	283	284	233
Perth	506 18	176	227	196	153	159

STATEMENT OF MEMBERSHIP AND LEGISLATIVE GRANTS FOR 1918-20.—Continued.

Societies.	Expenditure in 1919, on which grant for 1920 is based	Membership.		Legislative grants.		
		1918	1919	1918	1919	1920
	$ c.			$	$	$
Peterborough	607 20	268	340	265	212	207
Picton	161 62	86	60	78	75	47
Port Credit	141 38	70	54	60	58	41
Port Dover	376 81	93	106	107	104	101
Port Hope	221 25	92	90	93	60	67
Prescott (organized in 1919)	321 21	167	167	....	75	105
Richmond Hill	112 63	63	50	76	56	36
Russell	84 11	70	70	....	75	33
St. Catharines	2,401 55	828	862	800	800	697
St. Thomas	10,880 01	964	2,006	800	800	800
Sandwich	No Returns	186	....	415	338	......
Seaforth	583 87	156	169	234	156	160
Smith's Falls	343 75	60	52	123	115	82
S. Norwich Township	159 59	51	102	51	38	56
Stirling	176 78	75	102	60	51	60
Stratford	1,747 72	516	802	609	420	551
Strathroy	427 10	321	300	198	209	160
Thornhill	270 40	50	50	115	126	66
Tillsonburg	79 88	64	64	234	138	31
Toronto	3,532 21	557	621	700	575	700
Walkerton	192 28	....	160	....	....	78
Walkerville	638 40	172	156	204	161	168
Wallaceburg	1,429 68	150	263	130	292	352
Waterloo	313 39	89	101	81	90	87
Welland	113 06	102	107	75	96	48
Westboro	401 48	127	214	83	101	133
Weston	1,666 42	545	1,741	164	342	768
Wheatley	372 41	83	56	75	89	88
Whitby	123 78	79	65	74	60	40
Wiarton	No Returns	66	....	....	66	......
Winchester	473 21	219	213	159	192	148
Windsor	1,769 99	460	562	636	524	496
Woodstock	635 51	207	232	248	182	187
Totals	70,286 99	18,220	24,877	16,466	16,865	17,644

ACTUAL RECEIPTS AND EXPENDITURE OF HORTICULTURAL SOCIETIES IN 1919.

Societies.	Legislative grant.	Municipal grants and donations.	Members' fees.	Gate receipts at exhibitions.	Total actual receipts.	For exhibitions.	For seeds, bulbs and plants and Civic Improvement.	Lectures and periodicals.	Officers' salaries.	Total actual expenditure.
	$	$	$	$	$	$	$	$	$	$
Acton	76	5	108	......	192	......	179	36	15	247
Agincourt	40	......	83	......	126	......	*4 112	10	......	138
Alvinston	55	......	90	......	164	......	93	......	......	96
Amherstburg	95	85	113	......	315	......	132	......	25	310
Aurora	75	91	107	......	352	139	15	9	......	347
Aylmer	151	......	115	......	695	2	620	2	54	737
Barrie	120	......	175	......	526	......	274	......	50	376
Belleville	89	......	114	......	206	......	148	8	25	205
Blenheim & Harwich	87	35	43	......	345	......	*24 400	14	......	467
Bothwell	63	25	63	......	209	......	82	......	......	96
Bowmanville	54	......	68	......	135	......	108	......	10	139
Brampton	125	......	134	......	259	56	152	53	......	269
Brantford	294	250	1,012	......	1,708	......	*66 1,168	4	300	1,697
Brussels	66	......	87	......	154	2	153	8	10	193
Carleton Place	146	100	148	64	502	76	249	6	100	488
Chatham	800	1,000	667	......	5.181	......	4,305	27	50	4,598
Chesterville	75	......	96	......	219	......	187	......	18	222
Clifford	236	32	113	180	855	362	75	......	30	845
Clinton	176	125	325	......	711	......	380	2	15	754
Cobourg	40	......	77	......	117	......	77	31	......	121
Dundas	111	......	108	......	331	......	*15 198	....	25	286
Durham	46	......	66	......	165	......	122	......	30	168
Dutton and Dunwich	112	71	123	......	526	7	348	12	30	414
Elmira	68	55	77	19	234	43	*4 72	17	10	193
Elora and Salem	106	25	78	23	421	80	231	......	15	435
Essex	154	125	90	......	397	......	233	32	60	345
Fenelon Falls	75	......	102	......	180	20	27	37	......	109
Fergus	62	7	92	20	183	73	*10 25	....	15	159
Fort William	112	23	212	......	50	113	165	16	......	427
Galt	235	110	334	......	776	......	320	10	100	531
Goderich	107	20	127	......	292	......	218	13	20	285
Grimsby	54	24	80	......	158	38	55	33	......	141
Guelph	517	300	1,096	......	2,056	......	*114 1,175	138	......	2,075
Haileybury	111	25	69	58	281	23	......	......	50	282
Hamilton	450	82	801	24	1,510	144	646	49	163	1,525
Hanover	136	31	287	......	579	......	574	11	20	718
Hespeler	121	25	132	......	323	......	273	53	12	364
High Park	227	78	346	......	696	112	*35 250	50	34	711
Hillsburg	21	......	67	90	226	144	34	......	15	297
Ingersoll	366	......	179	......	1,581	......	1,161	......	100	1,595
Iroquois	75	6	106	55	298	33	159	6	......	234
Kingsville	198	252	119	200	1,185	......	429	......	20	792
Kitchener	378	210	349	118	1,106	347	*12 425	6	100	1,098
Lindsay	270	630	238	......	1,527	......	1,296	110	40	1,462
Listowel	47	......	65	......	284	......	269	......	......	305
London	761	7	1,604	......	2,638	......	1,074	636	150	2,622
Milton	62	......	121	......	207	......	*59 122	....	15	214
Mitchell	101	......	88	......	192	......	76	10	25	137

ACTUAL RECEIPTS AND EXPENDITURE OF HORTICULTURAL SOCIETIES IN 1919.—Continued.

Societies.	Legislative grant.	Municipal grants and donations.	Members' fees.	Gate receipts at exhibitions.	Total actual receipts.	For exhibitions.	For seeds, bulbs and plants and Civic Improvement.	Lectures and periodicals.	Officers' salaries.	Total actual expenditure.
	$	$	$	$	$	$	$	$	$	$
Morrisburg	108	16	191	......	962	40	*8 441	3	20	983
Napanee	51	100	62	......	232	......	112	......	25	150
Newcastle	72	2	79	......	210	......	125	2	......	166
New Hamburg	54	75	54	20	171	36	52	1	......	121
New Toronto	75	221	101	56	602	178	*15 123	29	25	534
Niagara Falls	149	577	709	......	1,436	......	899	232	......	1,368
Orangeville	149	50	67	......	413	......	353	......	15	398
Orillia	76	......	118	......	220	......	166	4	25	257
Oshawa	75	......	132	......	210	......	189	......	20	254
Ottawa	800	587	1,523	......	3,048	314	*185 1,588	....	175	3,059
Owen Sound	197	39	210	......	755	209	378	10	30	721
Paris	284	100	304	4	1,024	86	592	2	......	759
Perth	153	43	227	......	459	......	285	90	25	506
Peterborough	212	4	328	......	709	11	*37 325	....	50	607
Picton	75	......	60	......	167	......	115	......	20	162
Port Credit	58	9	54	......	129	87	....	16	......	141
Port Dover	104	30	106	33	381	81	6	46	50	377
Port Hope	60	......	90	......	150	......	207	......	10	221
Richmond Hill	56	13	59	......	128	89	*7 1	3	......	112
Russell	70	......	70	......	142	......	71	......	......	84
St. Catharines	800	433	862	114	2.399	308	844	10	310	2,402
St. Thomas	800	2,422	2,006	......	972	......	5,609	248	1,750	10,880
Sandwich		No Returns								
Seaforth	156	......	169	......	472	......	415	5	35	584
Smith's Falls	115	200	52	......	367	26	279	2	......	343
South Norwich Tp	38	......	102	......	163	......	133	14	......	160
Stirling	51	......	102	......	156	2	130	39	......	177
Stratford	420	66	802	......	1,492	167	*15 1,120	82	58	1,748
Strathroy	209	......	300	......	509	38	338	17	25	427
Thornhill	126	32	50	64	290	71	76	4	......	270
Tillsonburg	138	......	64	......	205	25	10	20	25	80
Toronto	575	235	621	......	3,498	598	*55 1,910	135	60	3,532
Walkerton	......	2	160	91	254	......	*12 106	6	......	192
Walkerville	161	......	156	......	439	......	378	......	75	638
Wallaceburg	292	675	263	......	1,488	......	....	1,041	291	1,429
Waterloo	90	75	101	35	313	99	74	25	40	313
Welland	96	......	107	......	211	......	61	......	......	113
Westboro	101	24	194	......	319	124	163	8	......	401
Weston	342	86	1,738	......	2,196	188	488	......	15	1,666
Wheatley	89	60	56	......	333	......	365	......	......	372
Whitby	60	......	65	......	126	5	70	24	......	124
Wiarton		No Returns								
Winchester	192	100	213	......	542	16	278	......	35	473
Windsor	524	377	562	......	1,655	......	1,319	......	150	1,770
Woodstock	182	150	232	......	632	45	335	6	50	636
Totals	16,381	10,657	24,350	1,268	61,952	4,657	40,092	3,573	5,160	69,974

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* For lawns and gardens.

SECRETARIES OF HORTICULTURAL SOCIETIES.

Societies.	Secretaries.
Acton	R. M. McDonald.
Agincourt	Mrs. M. B. Quantz.
Alvinston	C. Dyer,
Amherstburg	Rev. L. W. Reid.
Aurora	Chas. Bilbrough.
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Ayr	J. G. Fair.
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Blenheim & Harwich	O. F. Anderson.
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Dutton & Dunwich	W. H. Cape.
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Elora & Salem	W. O. Mendell.
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Walkerville	D. C. Bawtinheimer.
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Walton	R. H. Hoover.
Waterloo	J. Uffelmann.
Welland	A. Many.
Wiarton	Robt. Miller.
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Weston	Thos. Harrison.
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Whitby	Wesley Augustus.
Wiarton	Robt. Miller.
Winchester	E. N. Elliott.
Windsor	H. J. McKay.
Woodstock	W. L. MacKay.

Ontario Department of Agriculture

FIFTY-FIRST ANNUAL REPORT

OF THE

Fruit Growers' Association

OF

Ontario

1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

Printed by
THE RYERSON PRESS

To His Honour LIONEL CLARKE,
Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration the Fifty-first Report of the Fruit Growers' Association of Ontario for the year 1919.

Respectfully yours,

MANNING W. DOHERTY,
Minister of Agriculture.

Toronto, 1920.

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Fruit Growers' Association of Ontario

OFFICERS FOR 1920

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Vice-President	H. Sirett, Brighton.
Secretary-Treasurer	P. W. Hodgetts, Parliament Buildings, Toronto.
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Auditor	D. F. Cashman.

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2. J. C. Keeler, Brockville.
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6. C. R. Terry, Clarkson.
7. David Allan, Grimsby.
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9. J. E. Johnson, Simcoe.
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11. H. K. Revell, Goderich.
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13. W. L. Hamilton, Collingwood.
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London: J. C. Harris, Ingersoll, and A. Sadler, Lambeth.
Ottawa: W. T. Macoun, Ottawa.

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Royal Show: David Allan, Grimsby; J. E. Johnson, Simcoe; W. F. W. Fisher.
Ontario Horticultural Exhibition: D. Allan, J. E. Johnson, Elmer Lick, W. F. W. Fisher.

TREASURER'S REPORT

Receipts.

Balance on hand, Dec. 31, 1918	$825 19
Membership Fees	215 25
Government Grant	1,700 00
Ont. Horticultural Exhibition, Entry Fees	34 65
Interest	29 43
	$2,804 52

Expenditures.

Annual Meetings, February and November	$654 80
Committees	244 36
Periodicals	196 95
Stock	300 00
Show	197 19
Miscellaneous	257 62
Balance on Hand	953 70
	$2,804 52

DETAILS OF EXPENDITURE

ANNUAL MEETINGS:

February, 1919.

Advertising.	
Grimsby *Independent*	$5 15
St. Catharines *Journal*	4 15
St. Catharines *Standard*	3 75
Travelling Expenses.	
A. D. Harkness	10 65
Prof. Chandler	51 45
E. C. Everett	15 15
F. Shearer	5 85
A. W. Peart	2 90

Printing.	
College Press	$33 45
B. Hoover	8 25
Reporting.	
Miss Maud Coo	60 00
A. Sadler	7 25
Total	$208 00

November, 1919.

Heaters, Consumers' Gas Co.	$40 25
Programmes, College Press	20 00
American Tent Co., enc.	20 00
Travelling Expenses.	
T. G. Bunting	32 10
F. C. Keeler	20 00
Jas. E. Johnson	12 50
F. C. Sears	112 57
E. J. Atkin	26 16
Expenses, P. W. Hodgetts	15 35
Freight, G. T. Ry.	44 72
Light, Canadian National Exhibition	4 20

Advertising.	
F. H. Leslie	$5 15
Grimsby *Independent*	3 15
Farmer's Advocate	15 15
McLean Pub. Co.	13 20
St. Catharines *Standard*	5 00
Farm and Dairy	7 35
Gazette, Burlington	3 15
The Guide, Port Hope	3 15
Canadian Horticulturist	10 65
Canadian Farm	9 00
Farmers' Sun	9 00
Family Herald	15 00
Total	$446 80

COMMITTEES.

Travelling Expenses.	
H. Sirett	$7 25
Jas. E. Johnson	13 60
W. H. Bunting	37 40
H. K. Revell	14 20

H. P. Carpenter	$139 81
H. Leavens	13 65
A. A. Craise	12 15
P. W. Hodgetts	6 30

Horticultural Publishing Company, Stock	$300 00

SHOW.

W. F. Kydd, expenses	$13 00
Manning Cold Storage, Storage and Freight	172 19
J. J. Pritchard, Fruit	12 00
Total	$197 19

PERIODICALS.

Canadian Horticulturist	$196 95

MISCELLANEOUS.

D. Cashman, Auditor	$10 00
Horticultural Relief Fund for Allied Countries, per Royal Horticultural Society, London, Eng.	100 35
Wages of Office Help	119 00
Dominion Guarantee Co., Treasurer's Bond	10 00
Postage and Exchange	1 77
College Press, Printing	16 50
Total	$257 62

Fruit Growers' Association of Ontario

ANNUAL CONVENTION

The sixtieth annual meeting of the Fruit Growers' Association of Ontario was held on the premises of the Canadian National Exhibition, Toronto, on the 12th, 13th and 14th of November, 1919. Much interest was manifested in the proceedings, as the addresses and discussions were of a most practical character.

Mr. James E. Johnson, of Simcoe, President of the Association, occupied the chair.

PRESIDENT'S ADDRESS.

JAS. E. JOHNSON, SIMCOE.

It affords me a great deal of pleasure to welcome the Ontario Fruit Growers to this Sixtieth Annual Convention, to discuss the many difficult questions of the day. This gathering will mean renewed activity in the production of fruit this coming year. I hope that all present will feel that this is their meeting, and that you will become acquainted with your fellow fruit growers, and so help to make this a social and educational gathering.

The Horticultural Exhibition of Fruits in the Transportation Building is certainly a great object-lesson to the Fruit Growers of Ontario, and every Fruit Grower attending should be very enthusiastic, and should put forth every effort in order to produce the finest quality of apples suitable for box-packing. I especially call your attention to the Fruit Exhibit put up by the Ontario Department of Agriculture taken from their Demonstration Orchards. Mr. W. F. Kydd, who is our orchard demonstrator, will deal at length with the care of Government-leased orchards by giving you the facts and figures of care, costs, and production. The demonstration orchard in Norfolk County was visited by many fruit growers from all parts of Ontario, and I am certain that the results of their work upon this orchard will be a great inducement to our Norfolk apple growers to spend more money on the care of their orchards, which will result in the production of a large quantity of nice quality box apples for next season.

I sincerely hope that the Department of Agriculture will extend its work, and now is the time to do so, before it is too late, as apple production is on the decline in Ontario. I also think that the Department of Agriculture can do great work in having experienced fruit men throughout Ontario, to be known as Instructors in the growing and packing of fruit. The Dominion Government does something in this line at present, when the Fruit Inspectors are examining fruit for shipment, but I believe it is up to the Province of Ontario to carry on the line of educational fruit-growing for its own people.

I am more in favor of boxing apples than ever before, as apples wrapped in paper will keep far better than when packed in barrels. In the apple season we are almost sure to have weather conditions too warm for the packing of the apples in barrels. When the weather is warm and apples are packed in large packages heat is generated which results in the decaying of the fruit. Next year at the

Horticultural Exhibition it would please me to see a demonstration of packing of apples with an up-to-date sizer.

We have many soldiers taking up fruit-growing, and we should do all we possibly can to aid them and keep them contented on fruit farms. We must get a back-to-the-land movement which we cannot expect under existing conditions. Before this can be accomplished we have got to have a co-operation of all classes, whether working in the field, factory, or office, and make known to each other our exact positions unselfishly.

During the four anxious years of the war we were all wishing for the end of the struggle to come, thinking the conditions would then be much better, but we find ourselves to-day in a world of ugly temper and misunderstanding. We should take an interest in the other fellows' problems. The greatest difficulty we face to-day is that of understanding. We have had too much talk about masses and classes and too little recognition of the truth that, in the main, all men are very much alike. If we but had a better opinion of the others' ideas it would make for greater contentment, and this would result in greater progress. The time is nearly at hand when capitalists must give more thought to the laborers' questions, and workmen must be informed as to the problems of business and industry. I surely hope, therefore, that it will not be long before progress is made toward a better understanding. One of our greatest troubles of the day is our lack of knowledge as to the duties of others' occupations.

I wish to thank you for conferring upon me the honor of being your President for the year 1919.

HANDLING OF GOVERNMENT'S DEMONSTRATION ORCHARDS.

W. F. KYDD, TORONTO.

At the present moment the Government has five leased orchards for demonstration and experimental purposes. They have been used more for experimental work than for demonstrations; very few of the fruit growers have visited these orchards. There are 1,350 trees in these leased orchards. There is one orchard in Prince Edward County, one in Simcoe, one at Whitby, Ontario County, and one in Lambton, and one in Norfolk.

All kinds of sprays and spray pumps have been used in these orchards. All manner of cultivations have been carried on, including fall and spring ploughing.

There are 215 trees in the Whitby orchard, and the house divides the orchard in two, making it a long narrow orchard. We ploughed the middle of the orchard and left the two ends not ploughed. One was mulched and the other clean cultivation, and one end of that orchard is very much better than the other. The north end is far better land; it has been well fertilized with barnyard manure, and the grass was cut and left on the ground. There is very little difference in the crop where it was cultivated where the land was good, but on the poor land it made quite a difference; there is a marked difference in the vigor of the trees. That indicates to me that one kind of land will give you good results without cultivation, and another kind of land must have cultivation. I would go so far as to say that I think 99 orchards out of 100 should be cultivated in order to get the best results, but I do know of some orchards where they are making a great success and not cultivating. If you can get all the manure you want, cultivation is not necessary, because you can keep the moisture in the land by the use of manure. We have tried clean cultivation, and we have left a strip alongside of the growing tree of four or five feet on each side. We have them growing in sections ten feet square and eight feet square, and I could see no difference in the vigor of the trees, or the quality of the fruit, where it was clean cultivation and this strip of sod left on each side; therefore if I had a big commercial orchard of trees in full bearing I would not plow within four or five feet of the tree.

The orchard at Whitby is one of the worst orchards in the Province to keep free of scab; because it is surrounded by a wind-break of high spruce trees, and the moisture stays on the apples very late in the forenoon. If any of you have a new spray material that you want tested, we will try it on that orchard. A wind-break is good if it is far enough from the trees, but I would like to have a wind-break that I could set up one day and take down another.

The orchard at Collingwood was a good one when we took it, and we have had good results. It has paid us very well, and we have had a great deal less trouble with insects at Collingwood than we have had in this locality.

We took the most neglected orchard we could find in Lambton County; it had not been pruned for twelve years. We asked the owner what he would take for the orchard. He thought a little while and then said $150 a year. He said that was as much as he got out of it, and he had to haul the apples to the evaporator. For the last four years the Department has cleared $500 per annum off that orchard. I cannot tell exactly what we will make off it this year, but we have something like 300 barrels of apples. Part of that orchard is cultivated and part not cultivated; but there is no doubt in my mind that the most vigorous trees are in the cultivated portion.

The orchard we have in Prince Edward Co. has been rather interesting to me, and it is becoming interesting to the people of the county. It is about two and a half or three miles from Wellington. When it was leased about five years ago, the tree tops were all gone with canker and they were dying fast. We leased it for six years, and the first thing we did was to cut off all that cankerous wood. We have had next to no crop from that orchard up to this year; and we have 450 barrels this year. They are really good apples, and came off 200 trees. The apples that we picked this year are all off wood that we have grown in that orchard, and that is going to be a good orchard. The people in that locality have come to the conclusion that it pays to take care of an orchard.

You would be surprised at our being asked to go into Norfolk County, but you would not be any more surprised than we were. We always looked upon Norfolk County as an example, and I can tell you now that if it had not been for Norfolk we would not have many apples at this exhibition. The orchard we took in Norfolk County belongs to the President of the Norfolk Fruit Growers' Association. He had been a very sick man for a few years, and his son went to the war and left him without any help. The orchard had not been given very much care, and it required a good deal of attention the first year. Last year it did not make us any money, but we came out even. We are going to have a thousand barrels of apples off that orchard this year.

What have we done to get these crops of apples? We have manured them, we have pruned them, we have sprayed them, and we cultivated them, and sometimes we thinned them. If there is one thing that the apple orchards of this country are suffering from, it is lack of food. What could you do with a pig or cow if you did not feed it? Mr. Watson, of Dixie, has some of the finest apples ever grown, and he sells them in Toronto, and he is just coining money, and when he brings a load of apples into Toronto, he brings back a load of manure. We are going to manure this orchard in Norfolk County every year for three or four years. We give big bearing trees 400 lbs. of barnyard manure per tree. We are not putting it within five feet of the trunk of the tree. There is no benefit derived from putting the manure near the trunk of the tree. The old trees must be pruned if you want good sized fruit. Give them tankage, and you will get color, some people say; but I do not believe there is anything that will color apples except sunshine and lack of cultivation; these are the main things in coloring apples. I know trees that are 25 and 30 feet high. I do not want high trees. I want to bring them down to 22 feet. Do not bring them down all in one year; take off a little at a time.

A number of fruit growers are finding fault because they do not get good results from spraying, but that is because they do not half spray. I know one man who has a power sprayer, and he does not stop his team. I can't spray in that way.

If you have not used the gun, then buy a gun this spring, and if you have a big orchard get a machine big enough and strong enough to keep the gun going; get it strong enough to put out 200 gallons of liquid in 30 minutes.

I believe cultivation is much more easily carried on if you plow in the fall. I believe in fall plowing. I would not go closer than within four or five feet of the tree. I would stop cultivation somewhere about the middle of June or first of July. Sow some crop in the orchard. Some one told me that there was nothing that would give as fine a finish to the apple as buckwheat. I do not know as to that, but sow anything you like.

When you have a heavy crop of apples I am sure that you should thin them. We sent some men down to thin one orchard, and they lost us money by not thinning them enough. It will cost you money to thin the orchard, but it will just save you that much money when you come to pack the apples.

Q.—You did not tell us when to stop cultivation? A.—I am going to stop cultivating next year on the 1st of June. We thinned the orchard at Whitby one year, and we packed 96% of No. 1 apples.

Q.—Did you find any burning after spraying with the gun? A.—Yes, we got burning by spraying with the gun. Tell me who does not get it. The reason we got it was because we held the gun too close to the tree. If you get a gun that is easily handled you will not have that trouble.

Q.—What kind? A.—I have no preference. There are seven or eight guns on the market, and I advise getting one that you can move rapidly from the stream to the mist, and keep away from the foliage at least four feet. The only objection I have to the gun is that we are all tempted to use too coarse a spray.

Q.—What is the best spray solution? A.—I want to use lime and sulphur and arsenate of lead.

The orchards of Ontario are in a sad condition, and no one can be blamed for that, because during the past five or six years the farmer could not get any help on his farm. A number of small orchards are going out of commission, and I think we should try and do something to keep these orchards. I believe that one hundred apple trees are easily worth $250 to $300 per annum. There is big money in these little orchards. If we do not put our shoulders to the wheel this apple industry is going to be a thing of the past. Some one will say the young orchards are coming on, but I doubt if some of them will ever bear the way they are being cared for. I think we should take care of the orchards we have and get the results that we should from them. It can be done, and it is being done. If I were a young man I would plant fifty acres of apples this spring, and I would consider that I was doing a very wise thing for my children. You are not going to get the price you are now getting for your hogs all the time, and if I were a farmer I would buy a good farm with an apple orchard on it. If you have cows you have to get up at five in the morning to milk them, and the pigs will be squealing if you are not there to attend to them. In the cold weather you do not have to attend to the apple trees, and there is big money in an orchard that is properly looked after. I know orchards of only thirty-five trees that have paid $3 per tree for a number of years.

Mr. Fleming: I see there is a grant made for demonstration orchards. Is the money made out of these orchards deducted from the grant?

Mr. Hodgetts: The money received is all turned in as revenue and does not increase the amount available for this work. This year the orchard at Simcoe was visited by a great many people; it received more attention than the other four. The orchard at Whitby has not been visited by as many people as we think should have visited that orchard.

Mr. Bunting: Would not it be possible to have a field day once a month, and have the officials there that day and try and get the people out to these orchards?

The Chairman: The suggestion is good. They have the same thing in New York State each year. Many farmers have visited the orchards that we do not know about. Some have told me they have been through the orchard and seen the wonderful work that was being done. We have got to carry this educational work to the producers in order to get results.

THE COMMERCIAL VARIETIES OF APPLES OF CANADA AND THE UNITED STATES.

W. T. Macoun, Dominion Horticulturist, Ottawa.

In the vast territory covered by Canada and the United States, where the climates range from Arctic to tropical, there is a great diversity of vegetation and a great variety of edible fruits, and most important of all the fruits is the apple. It is grown in every Province of Canada and in every State of the United States, and, while in Canada the number of trees grown in the coldest parts of the coldest Provinces is very limited, so in the United States the number of trees which are grown in the hottest parts of the hottest States is also limited.

The apple succeeds best in a moderately warm or a moderately cool climate, but some varieties will withstand great cold and others will succeed in great heat. The hardiest varieties of the colder parts are those which withstand extreme cold, the hardiest varieties of the warmest parts are those which withstand extreme heat. In some parts of Canada and the United States the growing season is so short that only those varieties of apples requiring the shortest season in which the apple matures fruit can be successfully raised. Again, other varieties require such a long season of warm weather that it is only in the warmest districts where apples are grown that they reach full development. Crimson Beauty requires but a short season, without much warm weather, to ripen; whereas the Winesap and Newtown Pippin will not mature thoroughly except in the warmest parts of Canada, as, even if the season is a long one, unless there is much high temperature to properly mature these fruits they cannot be very successfully grown. Thus, just as the banana and orange require higher temperatures than the apple, if they are to mature, so different varieties of apples require different amounts of heat to bring them to full maturity. Thus, also, some varieties do well in a short relatively cool season; others do best in a long relatively cool season. Some varieties which only require a short season where the summers are hot do not reach their fullest development where the summer is cooler.

It has been found that there are about ninety varieties being recommended by growers in different parts of Canada and the United States, although, if all the varieties advertised by nurserymen were included there would be considerably more than this, and there are some doubtful ones which we have not included that might perhaps be.

We have divided the varieties according to their season into 13 summer, 18 autumn, 21 early winter and 38 winter sorts. Some of the summer apples are autumn sorts in the coldest districts; the autumn varieties, early winter; and the early winter, winter; but they have been classified according to how they keep in Ontario, or where a certain variety is specially noted.

SUMMER VARIETIES.

There are the fewest good varieties among the summer apples than of any other season. This is because varieties which will keep have been most sought after. The summer apples ripen at a time when the farmer is very busy harvesting his field crops, and they were not profitable for him to grow; and as it is only comparatively recently since apple growing became a specialized industry, there has not been time for many good commercial summer varieties to be found, originated and introduced. The varieties of summer apples which are being planted are Duchess of Oldenburg, Yellow Transparent, Red Astrachan, Crimson Beauty, Williams Favorite, Red June, Starr, Lowland Raspberry, Benoni, Early Harvest, Charlamoff, Blushed Calville, and Beautiful Arcade.

The Duchess of Oldenburg is the great out-standing summer apple. It is planted in nearly every apple district from North to South and from East to West. It withstands great cold and great heat. It is a good bearer and a good shipper, and the fruit is attractive in appearance, and in some places as much money has been made out of this variety as any other of any season. Yet it is not good enough in quality for a dessert apple at a time of year when nearly everyone wants an apple to eat.

Yellow Transparent is earlier than the Duchess, and it is an early and heavy bearer, but it is a difficult apple to handle, as it ripens unevenly and is easily bruised. It also is grown over a wide area, being one of the leading varieties in Georgia as it is in Ontario, and where it does not have to be shipped far has proved quite profitable. It, like the Duchess, is a poor variety to begin the season, as it is too acid and not good enough in quality for dessert.

The Red Astrachan has been grown in America for between eighty and ninety years, and at one time was much more popular than it is to-day. It is a handsome apple, but the fruit is usually very uneven in size, ripens very unevenly, and scabs badly. It apparently requires a warm season for best development. Georgia and New York States are the only States which report it as one of the leading apples.

The Williams, or Williams Favorite, originated in Massachusetts about one hundred and seventy-five years ago. Its value as a commercial apple has been more appreciated in recent years because it is an attractive red apple, is good in quality, and comes into bearing early and is productive. It does not, however, ripen until late in August or early in September, and another variety is needed to open the season. It is thought highly of in the States of New Jersey and Delaware, and does well in the Annapolis Valley.

The Crimson Beauty must now be referred to. If the Crimson Beauty were better in quality and a better shipper, here would be a prize indeed. As it is, it is proving a profitable variety, we believe, to a few who have bearing orchards of it. This variety was originated by the late Francis Peabody Sharp at Woodstock, N.B., but outside a few orchards in New Brunswick and a few in Nova Scotia it is practically unknown, yet one grower has made it well known in the Annapolis Valley. Its chief merit is in its extreme earliness in colouring. At Ottawa, where we have many hundreds of varieties bearing, it is the first red apple to colour. In 1918 it was coloured at the end of July, and was quite ripe before the middle of August at Ottawa. It, like most of the other early varieties that are planted, is too poor in quality to start the season with, and something better is needed. It is acid and has practically no flavour. It is a poor shipper and must be handled carefully for best results. At Ottawa and at Macdonald College, Que., where it is being tested, it has not borne well so far, though trees have been planted about twelve years.

Red June is a popular summer variety in the South-eastern States. It is of solid red colour and good in quality. Grown at Ottawa, it is uneven in size, most of the fruit running below medium to small. It ripens at Ottawa early in August, but the fruit remains in good condition until October. The flesh is firm, and this variety is a good shipper.

The Starr is a large yellowish-green apple of good quality that is thought well of in the State of New Jersey. We have not seen this fruiting in Canada.

The only State or place where Benoni is mentioned as being a commercial variety is in Illinois. It is attractive looking and of good quality, but runs rather small for a commercial apple.

Early Harvest, at one time a popular yellow apple, is mentioned in Kansas, but, although this is one of the earliest sorts and one of the best in quality, owing to its unevenness of size and poor shipping quality, it is grown almost altogether for home use, and is not widely planted for this purpose as it is very subject to scab also.

There remain four Russian varieties which are very hardy and very useful in the colder parts of Canada and the United States. All of these have fruited in Southern Manitoba. They are Charlamoff, Lowland Raspberry, Blushed Calville and Beautiful Arcade. Charlamoff is one of the most reliable and profitable summer apples at Ottawa. It is somewhat like Duchess in outward appearance but longer in shape, and the quality is good for dessert purposes. It deserves more general planting. It is highly regarded in Minnesota. The Lowland Raspberry is a highly coloured apple, mid to late August apple of good to very good quality. Owing to its tender flesh, it is a poor shipper, and the birds disfigure and destroy a large number of the fruits. Blushed Calville is earlier than Yellow Transparent and much hardier. It is a pale yellow apple with a blush, a poor shipper, but because of its great hardiness is valuable on the Prairies. Beautiful Arcade, also known as Repka Kislaga, and by several other names, is a very hardy yellow sweet apple valuable for the coldest parts.

It will thus be seen that the ideal summer apple is still to be found.

Of apples originated at the Experimental Farm, Ottawa, the following summer varieties are mentioned out of a large number which have been originated there, and it is hoped that some of these will become prominent commercial sorts some day. They are in order of ripening in August: Rupert, Forerunner, Melvin, Battle, Galetta, Medford, Melba. The Melba is the best of these, and very promising.

AUTUMN VARIETIES.

If a vote were taken among Ontario fruit growers the Wealthy might be given first place among the autumn varieties of apples, but if it were taken in some other part of Canada, or in certain of the United States, the Gravenstein would be considered the outstanding variety. Perhaps the best way of getting over the difficulty is to say that, while there is but one outstanding summer apple, the Duchess of Oldenburg, there are two predominant autumn sorts, the Wealthy and Gravenstein.

The Wealthy is probably more widely planted than the Gravenstein, yet, while the latter is not found in the colder parts of Canada and the United States, where apples are grown commercially, the Gravenstein is grown in nearly all of the great apple centres of the more temperate and warmer parts. It is very popular in Eastern America, and it is also popular in the extreme West. The Wealthy, however, can and is grown to a very large extent where the Gravenstein succeeds, but there are many places where the Wealthy grows where the Gravenstein fails. The Wealthy has much to recommend it. The tree is hardy, it is an early and heavy bearer, too heavy unless the apples are thinned; the fruit is of good size if thinned, handsome in appearance, and good though not of the best quality. The fruit, as a rule, scabs little or none in most places where it is grown. It ships well for an autumn sort. Its chief fault is that it drops badly, but if well thinned this weakness is much lessened. It is a leading variety in most of the more Northern and Eastern United States and in every province in Canada except the Prairie Provinces, where little fruit is grown. It is a fruit of the more temperate and cooler parts of America rather than the warmer.

The Gravenstein is the apple which has made the fruit of the Annapolis Valley famous. It must not be supposed, however, that because the Gravenstein has made the fruit of the Annapolis Valley famous that the best Gravensteins in America are grown in the Annapolis Valley. Very fine Gravensteins are grown elsewhere, and it is certainly one of the best of the autumn varieties in Ontario and British Columbia as well. The Banks, a highly coloured sort of the Gravenstein which originated in the Annapolis Valley, has become quite popular there.

It is surprising how few other autumn varieties there are which are widely planted in America, although there are about eighteen which are planted more or less.

Alexander will, perhaps, come next, but what a drop there is between Gravenstein and Alexander. This variety has been planted in the past because of its large size and handsome appearance and hardiness of tree. But the plantings of it are getting less each year as it is not good enough in quality.

Blenheim is little grown outside of Nova Scotia, where it succeeds exceptionally well. It is grown to some extent in Ontario and in New York State, but is not now mentioned as a leading variety in any of the States.

Fall Pippin is a fine old autumn variety that is still considered a leading sort in Connecticut, and Georgia, and in California, Oregon, and Washington, and is highly regarded by some growers in New York State and in Ontario.

Maiden Blush was at one time widely planted, and was a very popular autumn apple due to its very handsome, delicate appearance and good quality. It is not very hardy and is not grown in the colder fruit districts. It has to be handled very carefully, as it bruises easily. It is a popular apple in the State of Illinois, and seems to succeed well through the Middle West.

The six varieties mentioned, namely, Gravenstein, Wealthy, Alexander, Blenheim, Fall Pippin and Maiden Blush have been more generally planted than any of the others.

Twenty Ounce (Cayuga Red Streak) is popular in New York State, and is a large handsome apple, valuable for cooking.

Dudley is popular in New Brunswick and is become favourably known in other parts of Canada and in Minnesota. It is about the same season as Wealthy, is larger, is handsome in appearance, is of good quality and does not drop as badly as Wealthy. The tree is as hardy or hardier than Wealthy. This variety deserves a trial where it has not been grown.

Fanny has a limited popularity and is inclined to run small.

Okabena is a seedling of Duchess of Oldenburg, which ripens just after that variety and resembles it somewhat. It is an early bearer and productive, and is, we believe, a coming apple for the colder parts of Canada where apples are grown commercially. It is doing well at Ottawa. It is highly regarded in Minnesota.

Golden White, also known as Winter Stripe, is a Russian variety of handsome appearance, and fairly good quality, which has proved very hardy and productive at Ottawa, and is deserving of further trial.

Langford Beauty is a handsome apple of the Fameuse type, which has done well in Eastern Ontario.

St. Lawrence, owing to its shy bearing habit, while of very good quality, is little planted.

The remaining varieties are valuable in the colder parts of Canada and the United States. They are McMahan, Antonovka, Patten Greening, and Peach of Montreal; Worcester Pearmain, an English variety, has done well in some parts of Canada.

Many autumn varieties have been originated at Ottawa, but eight of the most promising are Glenton, Ambo, Lipton, Joyce, Pedro, Thurso, Patricia and Hume.

EARLY WINTER VARIETIES.

It was difficult to know where to place some of the varieties mentioned in this group, whether to put them here or among the winter sorts. The varieties put in this group are those which remain in good condition in most apple districts from November until February.

The two outstanding early winter varieties to-day are the McIntosh and Jonathan. There are, doubtless, more trees of Jonathan planted than of McIntosh, but McIntosh is an apple which we believe is rapidly overtaking the Jonathan in quantity of fruit produced, and, as the McIntosh is a Canadian apple, we are naturally proud of the high place it is taking.

The first tree of the McIntosh apple was found along a road by John McIntosh, Dundela, Ont., in 1796. He planted it out in his orchard, and from that tree have come the thousands of trees growing in Canada and the United States to-day. It succeeds well over a very wide area in Canada and the United States, but is not so popular near the Atlantic and Pacific Coasts, where the air is relatively moist, as it is too difficult to control the apple scab in such places. The good points of this apple are hardiness of tree, a regular bearing habit, productive without being over-productive, fruit of good size, very attractive in colour, very good in quality, and, while not very suitable for packing in barrels, makes an excellent box fruit, which commands a very high place. Very large plantings of McIntosh have been made in recent years in most of the Eastern States, and in the North-western States, Ontario and Quebec, and in some parts of the Maritime Provinces, and in the upper country in British Columbia. It is better in quality than the Jonathan, which may be considered its chief rival, although Jonathan has still the lead for quantity of fruit available.

Although the Jonathan originated in the East, it is the Middle West, West and North-western States which have made it famous, and it has been planted more extensively, perhaps, than any other variety in British Columbia. In the Eastern States and in Eastern Canada the fruit is not large enough, as a rule, and is not much planted. It is an early and heavy bearer, and the fruit is very handsome, being of a deep but lively red with patches of yellow often showing, which adds to its beauty. It is a seedling of the Esopus Spitzenburg, and, like that variety, has a high flavour. At present Western grown fruit of this variety meets a ready sale in the cities and towns of Eastern Canada and the United States early in the winter, when offered for sale in boxes.

The Province of Quebec is noted for its Fameuse, and, until the McIntosh became well known, was more largely planted, but, while the Fameuse is a fine apple, it is rapidly giving place, where it was once grown, to the McIntosh. The Fameuse is still considered a leading apple in the States of Maine, Vermont, and New York, and in parts of Ontario, where it is known as the Snow. It has not been a favourite near the coast.

Rhode Island Greening is one of the most important early winter apples, though we know that in Nova Scotia it keeps until near spring. It is one of the most highly thought of apples in the Eastern States, and in the State of New York comes second only to Baldwin in importance. It is also very popular in the warmer parts of Ontario, and, as we know, is very much grown in the Annapolis Valley. It is essentially an Eastern apple, and because of its excellence both for cooking and eating will, no doubt, continue for some time to be one of the best sorts to plant.

The Tompkins King is a well-known early winter apple and one of the handsomest in appearance and best in quality. This is a rather shy bearer in most places where it is grown, which is its main fault, but I have noticed that in Nova Scotia in the East and Vancouver Island on the West it is much more productive than in the interior, and thus seems particularly suitable for coastal conditions. It is only in Connecticut and New York States in the United States that it seems to be regarded as a popular commercial variety. It is now very little planted in Ontario, and is more popular in Nova Scotia than in any other part of Canada.

The Grimes succeeds very well over a large area and is one of the best early winter apples. It is a leading variety in the Middle Western States, in the North-western States, and to some extent in the Eastern States, and is one of the popular varieties in Virginia. It is not planted much in Eastern Canada, but does very well in British Columbia, particularly in the Okanagan. While it is a yellow apple and not so attractive in appearance as the red sorts, where it is well known it is in much demand owing to its very good quality.

The Wagener is, we know, regarded as a winter apple in Nova Scotia, but in most places where it is grown it does not keep well past mid-winter. It is considered a leading apple in Massachusetts, but in no other State is it mentioned as being an important variety. It has been planted to some extent in the North-western States and in British Columbia, but the tree has been found tenderer than Jonathan, it is not as good a shipper as Jonathan, hence Jonathan is a more productive variety as a filler. It has been planted to some extent as a filler in Ontario, and, as we know, is largely grown as a winter apple in the Annapolis Valley. It is a very early and heavy bearer and on this account makes a good filler. The fruit is handsome in appearance and good in quality, but a rather poor shipper in most places on account of its tender flesh.

The seven varieties already referred to, namely, McIntosh, Jonathan, Fameuse, Rhode Island Greening, Tompkins King, Grimes and Wagener are, perhaps, the most noted of the twenty-one included with the early winter sorts.

Two other well-known sorts, though popular over a relatively limited area, are Ribston and Hubbardston.

Ribston is an important variety in Nova Scotia in the Annapolis and Cornwallis Valleys and is grown to a limited extent in other parts of the Maritime Provinces: it is planted to some extent in Ontario, though it is not an important variety here. It succeeds well in the Lower Mainland of British Columbia and on Vancouver Island, but in none of the United States is it mentioned as an important variety. On account of its being an English variety and well known there, the Nova Scotians are able to find a good market for this variety in England.

The Hubbardston is growing in popularity, although it is not widely planted. It is one of the important varieties in the State of New York and is highly regarded in Western Ontario. It resembles the Ribston somewhat in outward appearance, and is of good quality and in season in November and December in Ontario.

Delicious has become a noted apple in a comparatively short time. It is well advertised by the introducers, and its remarkably tender flesh, and mild but high flavour have made it a favourite with most people who have eaten it. As grown in the North-western States and in British Columbia it is a very handsome apple of large size and very good quality. Some of the Eastern and Southern States now mentioning it as one of the leading or promising varieties are Maine, New Jersey, Georgia, New Mexico and Virginia, and, no doubt, it will soon be called promising in other districts. Where the season is relatively short and cool it does not develop as well as in those parts where the season is long and warm, and unless it is highly coloured and well developed it does not compare favourably with other varieties more suited to the conditions. While the season of Delicious is early winter it keeps well in cold storage until the following summer. In some places Delicious is subject to water core and to the naturally tender flesh becoming too soft. The Delicious has not proved hardy at Ottawa.

The Yellow Bellflower, or Bishop Pippin as it is known in the Maritime Provinces, is, perhaps, more important in the apple districts of California than in any other part of America. There it is a popular autumn apple. It is mentioned as one of the leading apples in New Mexico, so that it is known far from the Maritime Provinces. It is still regarded as one of the leading apples in New York State.

The Ortley belongs to the Bellflower group and is grown to a considerable extent in the North-western States.

The Winter Banana is one of the newer early winter apples which deserves mention. It is handsome in appearance and very good in quality, but, as it shows bruises readily, it is not now being planted extensively as a commercial apple. It has been planted to a considerable extent in the North-western States and in British Columbia. It is not now mentioned as a leading variety in any of the United States.

Westfield Seek No Further is a popular variety over a limited area. It is very productive and of good quality, and the tree is hardier than some of the other early winter apples. It is inclined to run rather small unless well grown. It is still considered one of the important apples in New York State, and is well thought of along Lake Ontario in the Province of Ontario.

Sutton Beauty has not increased in popularity as rapidly as one might expect to judge by its handsome appearance and good quality. Vermont is the only State which lists it as an important variety, although it has been planted fairly extensively in New York State and, doubtless, in other Eastern States.

Wolf River has been planted instead of Alexander, where a large red cooking apple is wanted. It resembles Alexander very much, but keeps better. This variety is planted to some extent in the colder parts of Canada, where there are commercial orchards, and in Minnesota and Wisconsin especially in the United States.

Cox Orange Pippin. This delicious English variety is grown to a limited extent only in America. It is succeeding well in parts of British Columbia, and in the warmer parts of Nova Scotia. It is not very productive, as a rule.

King David is one of the newer apples which has come into notice mainly in the North-western States and in British Columbia. It is dark red in colour, of striking appearance, and good quality. It is not mentioned as promising in any of the Eastern States.

Opalescent. This is a large, handsome red apple of recent introduction. The tree is a good bearer. Young trees seen in Nova Scotia in 1919 were bearing heavily. The flesh of the fruit is, however, coarse. It lacks juice, and although well flavoured is not a high class apple.

Scarlet Pippin, a handsome Fameuse seedling, keeping better than Fameuse, is planted to a limited extent in Ontario.

Milwaukee is a winter apple of the Oldenburg type, and is useful as an early and heavy bearing hardy variety.

Hibernal is, perhaps, the hardiest apple planted in America, and is useful in the coldest parts. It is not desirable where other sorts succeed as the quality is low.

Two promising early winter seedlings of Northern Spy, originated at Ottawa, are Ascot and Rocket.

WINTER VARIETIES.

What is the outstanding winter variety of apple where the whole of North America is considered?

There are about ten from which to select the leader. They are Baldwin, Northern Spy, Winesap, Yellow Newton, Stayman Winesap, Rome Beauty, York Imperial, Stark and Ben Davis.

Of these, Ben Davis is undoubtedly the variety that has been most generally successful if we may call getting large crops of well coloured fruit and selling at a good profit is being successful, and most fruit growers would consider this to be so. Ben Davis has done well in the north, south, east and west in the United States, except in the very coldest parts. It has been grown profitably also in Canada, except in the coldest districts. The plantings of Ben Davis are, however, getting less each year in proportion to other sorts as, considering the enormous number of trees which have been set out of varieties of better quality than Ben Davis, growers are a little afraid that Ben will not be so profitable in the future as he has been in the past. Moreover, recent severe winters have been hard on

Ben, and many thousands of trees have been killed in the Middle West in the United States and in Ontario in Canada.

The plantings of Baldwin are confined mainly to the States east of the Mississippi Valley, to the warmer parts of the Province of Ontario and to the warmer parts of Nova Scotia, and over that great area an enormous quantity of this fine apple is grown. It might be considered the great staple winter apple of America. It is productive, handsome in appearance, and good in quality. It is one of the tenderest of the winter varieties, however, and it is useless to plant it where the coldness of a climate makes its success doubtful. To do its best it requires a warmer summer than it gets in the Annapolis and Cornwallis Valleys.

If the average consumer in Canada were asked which is the best winter apple he would unhesitatingly say Northern Spy. Northern Spy has acquired a reputation for quality in Canada and certain parts of the United States which would make other sorts envious if they were human. Like the Baldwin, however, the Northern Spy, though grown to some extent in the North-western States, is essentially an Eastern apple. It is one of the hardiest of the winter varieties and will fruit where Baldwin, Greening and King are winter killed. Many growers of Northern Spy, however, find that it is not one of the most profitable for them to grow, as there is a large proportion of wastage in the fruit apart from the fact that it takes so long to come into bearing, and if it were not for the great demand for it by consumers we fear that this fine sort would not hold its own among other sorts.

The Winesap, while not much known in Canada, is a very important apple in the South-eastern States, the Southern States, the Middle West, and in the North-western States. In Canada, the only part which seems to suit it is the most southerly part of British Columbia, where the summers are hot and relatively long. This variety is very good in quality, and we might say is to the south as a dessert apple what the Northern Spy is to the northern parts of the United States and to Canada.

The Stayman Winesap is larger than the Winesap, and just as good or better in quality and is rapidly taking the place of Winesap in some sections. It seems hardier than Winesap and is being grown successfully where Winesap does not do well. It is an apple which should be thoroughly tested in the warmer parts of Ontario.

The Rome Beauty has become a very familiar apple in Canada during the winter in boxes from the North-western States, where this variety has come rapidly to the front. It is of good size, very handsome in appearance, and good in quality, though not as good as Northern Spy or Winesap or Stayman Winesap. While it is doing particularly well in the West, it is now one of the leading apples in the Middle West. It is also succeeding well in Virginia, Georgia and New Mexico. Doubtless, it will soon take an important place in more of the Eastern States. While planted to some extent in British Columbia, it has been little planted in Eastern Canada yet. It seems hardier than most of the great commercial winter sorts, and is an early and heavy bearer. It is well worthy of a thorough test in the great apple districts of Ontario.

Yellow Newton or Albermarle Pippin is another variety which requires a long warm season for full development. It is one of the tenderest of the winter apples, and is grown mainly in the Southern States, in the North-western States, and to some extent in the warmest parts of British Columbia. The Yellow Newton on account of its firm flesh is a good shipping apple. It is very good quality, and is highly regarded in the Old Country.

Stark. The Stark apple is not mentioned by any of the States as being a leading apple. In Canada it has been more extensively planted in the Province of Ontario than anywhere else, and has proved a profitable variety there, as it is an early and heavy bearer. It has been planted to some extent in Nova Scotia also, and we understand is now considered one of the leading apples in the Annapolis Valley. The quality of the Stark, however, like the Ben Davis, is not good enough to ensure its permanency, and is too mild in flavour even for a cooking apple.

York Imperial is another winter sort which is confined mainly to the Southern States and to the Middle West. It is handsome in appearance, but the quality is not high. It is, perhaps, being more largely planted in Virginia than in any other State.

Roxbury Russet or Nonpareil. This variety is not an important apple outside New York State, Ontario, and Nova Scotia. The good qualities of the Russet varieties are not as much appreciated in America as they are in Great Britain and Europe, and if it were not for the export trade this fruit would probably not be so much grown in Nova Scotia as it is. It is one of the best keeping winter apples, and the quality is good to very good.

American Golden Russet is little planted nowadays. It has the reputation of being a shy bearer, and there is also only a limited demand in the home markets for this fine dessert sort.

Esopus Spitzenburg is one of the finest dessert apples, but does not appear to be a profitable variety to grow in most sections. It is not very productive and scabs badly in the East. It is still considered an important variety in New York State, but the Washington Spitzenburgs are those best known on the market, and they command a very high price.

The remaining winter sorts may be very briefly mentioned. Gano and Black Ben Davis, highly coloured strains of Ben Davis, have been planted to some extent, but are no better except in colour than Ben Davis.

Red Canada is a handsome winter apple of high quality, which is considered one of the best commercial apples for Vermont, and is highly regarded in Western Ontario, where it is increasing in popularity. It is also called Steele's Red Winter and differs from the Canada Red, which is grown in the Province of Quebec, which is a much inferior apple, the proper name of which is Roseau.

Akin Red is another highly coloured winter apple of very good quality, which, although not a leading sort anywhere so far as we are aware, has been planted to some extent in recent years. It seems to require a long rather warm season for best development.

Minkler is a prominent winter apple in the State of Illinois, and is met with to a limited extent in other parts of the United States and Canada.

Salome is one of the hardiest of the late keeping varieties. It is handsome in appearance, productive, and good in quality, and, while it does not seem to be an outstanding variety anywhere, it is well thought of in the North-eastern States and by some growers in Ontario. It is grown to some extent in British Columbia and the North-western States. In some districts it runs uneven in size, a large proportion of the fruit being too small.

Fallawater is a well known winter apple in Nova Scotia and Ontario and in the Eastern States, but is no longer extensively planted. It is not good enough in quality to compete with other better apples.

The Wellington apple, an English variety, seems to have found a place in Nova Scotia.

Blue Pearmain is an old variety, which is one of the hardiest winter apples, but usually does not bear enough to make it very profitable. It is found to a limited extent in the North-eastern States and all through Eastern Canada. It is of very good quality.

Ontario is an apple originated in the Province of Ontario, a cross between Northern Spy and Wagener. The tree bears young and heavily. This variety has done well in Ontario, in New York State and in Annapolis Valley, but it bruises so readily that it does not advance rapidly in favour.

Cranberry Pippin is a variety which has succeeded very well in Southern Ontario, but is too inferior in quality to be planted any more.

Tolman is still the principal sweet apple grown, and succeeds well in the Eastern States, in Ontario, and in the Maritime Provinces.

Paragon, sometimes known as Mammoth Black Twig, is a red apple of good quality, which has proven particularly suitable for the South-eastern and Middle West apple districts where Winesap is so well known. This is not the same as another apple sometimes known as Mammoth Black Twig, but more correctly Arkansas Black, which seems to be an important variety in Idaho, Texas and New Mexico.

Bethel, Scott Winter, Pewaukee, North Western Greening, and Canada Baldwin are all varieties which succeed in the colder parts of Canada and the United State, where the best winter apples do not succeed, but none of them are good enough even for these regions. Other varieties which have a limited adaptation or are grown over a limited area in the United States are Kinnaird, Willowtwig, Hero and White Pearmain, Sheckley, Terry, Yates, Hoover, Dr. Matthews and Red Texas. There are, of course, many others which might be mentioned.

Some promising winter apples originated at Ottawa. All seedlings of Northern Spy are Donald, Elmer, Bingo, Niobe, and Emilia.

While it has not been possible to describe in detail all the varieties mentioned in this paper, full descriptions of most of them will be found in the writer's bulletin on "The Apple in Canada," which can be had free on application to the Experimental Farm, Ottawa.

Which of all the varieties mentioned are recommended for Ontario? There may be a difference of opinion in regard to this, but, after correspondence and conversation with growers the following list was published in the writer's bulletin on "The Apple in Canada," and is practically the same as that recommended by the Fruit Branch of the Provincial Department of Agriculture:

DISTRICT 1.

Counties North of Lake Erie:

Summer.—Red Astrachan, Duchess of Oldenburg.

Autumn.—Gravenstein, Wealthy, Blenheim.

Early Winter.—Tompkins King, Hubbardston, McIntosh, Fameuse, Rhode Island Greening.

Winter.—Baldwin, Northern Spy.

DISTRICT 2.

Counties on Lake Huron and the southern part of the Georgian Bay and inland to Wellington and Waterloo Counties:

Summer.—Red Astrachan, Duchess of Oldenburg.

Autumn.—Gravenstein, Wealthy, Alexander, Blenheim.

Early Winter.—Tompkins King, Rhode Island Greening, McIntosh, Fameuse.

Winter.—Baldwin, Northern Spy.

DISTRICT 3.

Counties on Lake Ontario north to a line south of Lake Simcoe on the west and converging to Kingston on the east:

Summer.—Duchess of Oldenburg.

Autumn.—Gravenstein, Wealthy, Alexander, Blenheim.

Early Winter.—McIntosh, Fameuse, Rhode Island Greening.

Winter.—Baldwin, Northern Spy. Baldwin is too tender in some places.

Additional varieties suggested for trial, home use or local market for districts 1, 2 and 3: Yellow Transparent, Primate, Ribston, Swayzie, Tolman, Rome Beauty.

DISTRICT 4.

Counties of Wellington and Waterloo and the higher elevations in the adjacent Counties:

Summer.—Duchess of Oldenburg.

Autumn.—Wealthy, Alexander.

Early Winter.—McIntosh, Fameuse.

Other varieties such as Gravenstein, Blenheim, Ribston and Northern Spy will succeed in the most favourable parts, but it is safer to top-graft them.

DISTRICT 5.

From near Kingston, north and east to latitude 46 deg. and along this line west to and including Manitoulin Island, and south to District 3:

Summer.—Yellow Transparent, Crimson Beauty, Duchess of Oldenburg, Langford Beauty.

Autumn.—Wealthy, Alexander, Dudley, McMahan, Okabena is promising.

Early Winter.—McIntosh, Fameuse, Wolf River.

Winter.—Milwaukee, Bethel, Scott Winter, Scarlet Pippin succeeds well near the St. Lawrence River, but it is hardly hardy enough inland.

Additional varieties suggested for home use:

Summer.—Lowland Raspberry.

Autumn.—Peach of Montreal, St. Lawrence.

Winter.—Pewaukee, American Golden Russet, Tolman.

While a few winter varieties are recommended for this district, extensive plantings of them are not advised.

DISTRICT 6.

North of District 5:

Summer.—Blushed Calville, Lowland Raspberry, Duchess of Oldenburg and Charlamoff; the two latter being autumn varieties in this district.

Autumn.—Golden White, Antonovka, Wealthy, Hibernal, McMahan, Longfield and Patten Greening—all of which might be called early winter apples in this district. Where apples will not grow, the following crab apples should be tried: Whitney, Transcendent, Florence, Martha and Hyslop. Where the climate is most severe, the hybrid crab apples originated at the Central Experimental Farm, Ottawa, such as Silvia, Jewel and Charles, should succeed.

LESSONS FROM THE ORCHARDS AT MACDONALD COLLEGE.

PROF. BUNTING, MACDONALD COLLEGE, ST. ANNE DE BELLEVUE, QUE.

The orchards at Macdonald College, in the Province of Quebec, are located twenty-one miles west of the City of Montreal, and comprise thirty acres, consisting of twenty-four and a half acres of young apple trees, twelve and thirteen years of age, an acre and a half of American plums, some cherries and pear trees, and some older apple trees from twenty-five to thirty years. The standard apple trees have been planted 33 feet x 33 feet with fillers the one way consisting of early bearing apple trees, sour cherry and plum trees, mostly of the Americana group.

Over 100 varieties of apples, including a number of Mr. Macoun's named seedlings have been planted. Of this number of varieties 12 are represented by forty or more trees of each—12 by 20 or more trees and the balance by from one to four trees.

The soil is a fertile clay loam overlaying a rather stiff clay, and underneath this at varying depths is rock. The land has been fairly well drained with tile, and for the most part dries up in the spring much earlier than adjoining undrained land.

CULTURE.—The orchard has been well cultivated and planted with intercrops, consisting of potatoes and other vegetables, strawberries, some raspberries and clover. During the first five years of the orchard the intercrops occupied a large part of the total area, but as the trees increased in size this area was decreased in order to permit of cultivating the tree rows without seriously interfering with the limbs of the trees. By the tenth year approximately only one-half the space between the tree rows was intercropped, and after this time, as the orchard was commencing to bear more heavily, it was thought wise to discontinue intercropping, although some parts of the orchard have had crops between the tree rows during the past three years. The intercrops have been quite satisfactory and profitable, and would be recommended for any young orchard where an adequate market can be found for the produce. Potatoes, beans, beets, carrots and turnips, cabbage, squash, tomatoes and early short varieties of corn, strawberries and raspberries have all been used extensively.

Clover planted as a catch or cover crop in June on one occasion was allowed to grow the following year for hay, but on account of the difficulty and cost of getting it out from among the trees it could not be recommended, although an excellent growth was secured. The result of the fertilization of the ground for these intercrops and their cultivation has stimulated a heavy wood growth, and many of the trees have not come rapidly into bearing, but now that they are larger are capable of bearing heavier crops, and the intercrops provided the return during the early period of the orchard. The intercrops, in addition to providing a revenue, considerably reduced the cost of cultivating the orchard, as the cultivation, instead of being solely charged to the orchard, is largely charged against the intercrop.

The result on the fruit of the heavy feeding and cultivation of these intercrops has been to greatly increase its size, and on the whole it has not been so well coloured, although of good colour, as plots where cultivation was stopped late in June or early in July.

In later years of intercropping and especially when the trees were carrying considerable fruit, the work of spraying did much damage to these crops, in that they were tramped on and driven over by the spray wagon and team, and the men, in quickly moving about with a line of hose also did much damage.

COVER CROPS.—A number of different kinds of cover crops are sown during the latter part of June or early July each year. At first these crops were sown along the strip occupied by the tree row and where they would not interfere with the intercrops. As the area in intercrops was decreased the cover crop was proportionately increased, so that by the tenth year a strip approximately 16½ feet wide was in cover crop. Since then each year a cover crop has been sown over the entire area of the orchard where other crops were not grown or weeds were allowed to grow.

The cover crops grown may be divided into three general classes: first the legumes, including clovers, vetches, horse beans, and cowpeas, of which the first two are most satisfactory, but of late years have been too costly for seed for orchards not particularly in need of nitrogen. Second, broad leaved non-legumes such as rape and buckwheat: these have the advantages of producing an abundance of humus and are not so costly. They smothered weeds by their rapid and strong growth but hold the dew and rain and make it very wet under foot at harvest time and difficult to gather windfalls. The third class are the grains, including oats, rye and winter wheat, of which the two latter are the best, producing an abundance of humus, and not having the decided objection of buckwheat or rape in being so wet underfoot. A fourth class may be referred to as weeds, which have the advantage of costing nothing for seed, and usually give a good covering to the ground. At the present writing we have a piece of chickweed which is ideal from the standpoint of protection and the orchard. In the areas allowed to grow up in weeds we handle it like the rape, and cut it once with the mower about the end of August or sometimes before the harvest. The objection to this is the injury to windfalls by punctures in the skin of the fruit in falling on the stubble.

FERTILIZERS.—Fertilizer experiments have been carried on in one block of over seven acres, including apples, and some cherries and plums used as fillers. In these tests there are check plots with no fertilizer, stable manure used heavy and light, and various combinations of commercial fertilizers, including an excess of each of nitrogen, potash, and phosphoric acid. In this block, intercrops were grown continuously for ten years, and the land was moderately fertilized with stable manure over that part of the centre of the tree rows occupied with crop. During the last three years no intercrops were grown. The cover crops during this time have consisted of clover or rape. Up to the present no difference in either wood growth or fruit production as the direct result of the use of fertilizers either manure or commercial, has been noted, but it must be borne in mind that this block has good soil, and has been well cultivated and seeded to cover crops which undoubtedly has added a large supply of humus and available plant food to the soil. Whether or not marked differences in regard to yields will later occur as the result of fertilizers remains to be seen.

PRUNING.—The orchard has been annually pruned, and on the whole rather heavily. This heavy pruning has been due in part to the rapid and strong growth of the trees. One of the chief difficulties in connection with pruning has been the large number of main limbs that have been allowed to form from the trunk in the early years of the orchard. In some cases there are from ten to a dozen quite close together, and this has been a source of weakness in the trees, resulting in cracking and splitting in the main crotches, and it has been a favoured place for the development of a canker. This injury has later resulted in the breaking out of some limbs, and following the winter of 1917-18 considerable canker developed. Three to five main limbs well placed on the trunk are sufficient for the main scaffold of most apple trees. Lighter prunings on the whole would likely have resulted in earlier crops on some varieties.

TOP-GRAFTING.—Some top-grafting on hardy, vigorous trees, such as Arabka and Longfied, has been done, and where the varieties used for the graft are hardy they have done well. However, a number of varieties not recommended for the province on account of lack of hardiness and including Spy, Baldwin, King, Gravenstein, etc., were used, and these were entirely killed out in the winter of 1917-18, although Arabka trees came through fairly well.

SPRAYING.—We have had an abundance of disease and insect pests to contend with, including scab, canker, oyster-shell, codlin moth, bud moth, cigar case bearer, tent caterpillar, fall web worm, canker worms, cherry slugs, aphids, etc. These have all been successfully kept in check, with the exception of the canker, which has made some headway. The apple scab and insect pests have presented no difficult problem, but are a great drain on labor during a busy season, and an item of considerable expense in growing good fruit. For the main part of the orchard the spraying has consisted of the use of lime sulphur in combination with arsenate of lead, the paste and dry form, and latterly of arsenate of lime. In addition, considerable spraying work has been carried on to test other combinations or recommendations, and new materials. A power sprayer has been used for all work except in small plot sprayings, and during the past three years the spray gun was used for applying the liquid.

We have found the lime-sulphur satisfactory for scab, as an orchard spray, and have not noted under our conditions the loss from dropping of the newly formed fruits as the result of lime-sulphur spray injury reported from Nova Scotia. The lime-sulphur is just as satisfactory as a scab control as Bordeaux mixture, but in connection with the use of Bordeaux mixture we have, from time to time, had Bordeaux injury or russeting on such varieties as McIntosh and Fameuse. In addition lime-sulphur has been a cheaper spray than Bordeaux mixture during late years. As there is no San Jose scale to contend with we have dispensed with the lime -sulphur 1.003 sp. gr. spray for some years, and are using the semi or delayed dormant lime-sulphur spray of 1.001 sp. gr. for first spray. Several brands of arsenate of lime have been used extensively in combination with lime-sulphur without any ill effects from burning, and it has proved a satisfactory control for eating insects and is considerably cheaper than either of the two forms of arsenate of lead.

In using the Spragun we have found it a great labour saver, but during the past year, which was favorable to the development of scab, we have had considerable scab develop in the cavity or stem end of the McIntosh, while nine-tenths of the area of the fruit was absolutely free. This injury is attributed to the use of too coarse a stream under high pressure, driven in from the Spragun from the ground, when the apples were small and on their sides, or the calyces pointing outwards, and the spray has not entered this part of the cavity. Later when the apples were larger and pointing downward dew or moisture would lodge in the calyx and favored the development of scab on this part untouched with lime-sulphur.

The dusting machine has not been used, but has been observed in other orchards. It is a great labour saver, but in the writer's opinion should only be considered an adjunct to the spraying equipment in the large orchards. This past season one orchard has been inspected in which the dusting machine was depended upon to control the scab, but on account of high winds prevailing throughout the spraying period the dust could not be put on satisfactorily, with the result that the crop was very scabby and wormy. In this orchard the dusting machine gave excellent results last year.

Thinning of Fruits. This is one operation that is little practised or understood in the east, and one that should be taken up more generally in connection with some varieties. The writer has practised the thinning of Yellow Transparent, Duchess, and Wealthy extensively for some years, and to some extent on other varieties, and considers it essential to the production of high class fruit of these varieties. The thinning has been done on comparatively young trees which could be reached with six and eight-foot stepladders. The cost has been low, ranging from 15 to 30 cents per tree, but it is felt that this cost is more than compensated for by the smaller number of fruits to handle in picking and packing. In the process of thinning, which is done in late June, all defective or ill-shapen apples are removed and also those apples that are not well placed as far as receiving a fair amount of light. Only one apple is left to a spur, unless the crop is very light on the tree or some limbs, when two apples are left. If the spurs carrying fruit are quite close together as is frequently the case with these varieties, all the apples are removed from some spurs. We do not attempt to thin to a definite distance apart, but prefer that the apples be from four to six inches apart on any one branch. The result of thinning has been to greatly increase the uniformity, quality, and size of the fruit, and it is much better colored because all fruits have ample room for good light. We believe we have more regularity in bearing on these thinned trees as the direct result of thinning, although there are many other factors influencing the bearing habit. There has also been little breaking of limbs on the thinned fruit as compared with heavily laden unthinned trees. The satisfaction in handling this high class fruit should count for something as well as the higher prices obtained for the box or barrel of such fruit.

Varieties. In handling an orchard of so many varieties, many difficulties have been experienced in marketing the fruit. The market requirements are for a large output of uniform fruit of known value. Good fruit of known value will sell readily, but unknown varieties of good quality are more difficult to sell, and will not bring such good prices, while little known varieties of mediocre merit should be discarded from the commercial plantings. The local adaptability of the district to different fruits as well as market requirements should be carefully studied in determining the varieties that should be planted. Too many varieties is a mistake except probably for local markets; however, it is well to have five or six varieties which will aid in distributing the work of picking, packing and marketing over a longer season and also aid in ensuring some crop in off-seasons for some varieties. The McIntosh and Fameuse are our two leading varieties and are similar in many respects, but the marked differences in other respects should be noted and studied by the intending planter. The McIntosh will fall readily as it nears maturity, and in cases of high wind many apples may go to the ground. The Fameuse hangs to the trees well, and may be left until after the McIntosh are harvested.

The Fameuse has been very seriously injured as the result of the winter of 1917-18, and thousands of old and young trees have been killed out throughout the province. But we are not discouraged, for the Fameuse has stood the test and been the leading variety for a hundred years.

Our best and most profitable varieties are Duchess, Wealthy, Alexander, McIntosh, and Fameuse (Snow). We can grow those to perfection and have an unlimited market for them. Of winter apples we have so few of sufficient hardiness and merit that it is questionable whether any of them should be recommended for extensive commercial plantings in Quebec.

One of the most difficult factors to contend with in the Quebec orchards is the prevalence of canker. The Fameuse is quite subject to it, and the McIntosh is more resistant. Probably we will have to check the tree growth earlier in June to allow of better ripening of the wood before severe weather sets in, for it is largely through frost splits or cracks on the trunk and larger limbs, especially in the crotches, that the disease gains entrance.

In conclusion I would like to say that from my experience and observation in Quebec as well as in Ontario I am very hopeful and optimistic of the fruit industry. However, we have not been making the progress that conditions would justify. The British Columbia fruit grower is sending in his fruit to our home markets, and taking the cream of the prices. The dealers openly say they prefer to handle the western fruit on account of its uniformity, good size, high quality, and splendid pack, and to-day the buying public are demanding this type of fruit. The fruit grower of the east must become a better grower than in the past, and will probably have to specialize and extend his orchards to regain his home markets, and capture new ones. Success in fruit growing is dependent largely on the following factors, and I would emphasize them in the following order: Varieties, suitability of soil conditions, cultural methods, pruning, spraying, and attention to those other details such as thinning, picking, packing and storage, all of which help to make the difference between good crops of high-class fruit and poor crops of indifferent fruit.

THE NIAGARA DISTRICT GRAPE GROWERS' ASSOCIATION.

J. C. Livingstone, Grimsby.

My knowledge of the grape growing industry in the Niagara District goes back thirty-five years, and with a general knowledge extending back for forty-five years. Thirty-five years ago it was not a usual thing to sell grapes for 15c. and 20c. per pound. The general crop was sold at 10c. and 12c., and if there was a big crop it was sold at 8c.; that would mean 56c. a basket. The grape growers were alarmed when grapes dropped to 6c. per pound, or 42c. per basket. I remember a few years ago that I sold grapes for 8c. per basket; the basket cost me 3c., and the picking 1c., which left me 4c. for the crop and drawing to the station. In the meantime a great acreage of grapes had been planted, because it was thought that grapes were easy to grow, and they would grow on any kind of land; but it has been proven that the best cultivation and spraying and pruning are necessary to get the best results.

I will commence with 1907 to 1910 when grapes were sold at 10c. to 12c. per basket, and I want to bring you up to this year when they were sold to the wine companies for as high as $65 per ton, and in special cases to the Italian buyers for as high as $90 per ton. Previous to 1910 the grape grower was not working for himself at all, he had no control of his own business, he was working for the middle man or retailer. For several years I kept account of what grapes sold at in the Niagara District, and what they were sold at in Owen Sound, Sault St. Marie, Winnipeg, Brandon, and Regina; and I found that the grape grower would be getting 4c., 5c., and 6c. for a basket; and the dealer or middle-man would get from 1c. to 5c. on a basket of grapes, and that the retailer would get 20c. on each basket. The retailer was making more money on a basket of grapes than the dealer and grower put together.

That condition was brought about in a most peculiar manner, the grape growers are scattered about from Hamilton to Niagara. There was great competition for the trade in the west; dealers would send men out there and make contracts for the season. In order that they might have the grapes to ship, the dealers had to make contracts with the growers. The dealer went about in July and August, and made contracts with the growers. The cheaper he could buy the cheaper he could sell, and his profit came in between the buying and selling price, and crops were contracted for as low as 11c. per basket. You can see the small price he obtained when he had to pay 4c. for the basket and 1c. for picking. It was impossible at these prices for the grape grower to do anything more than live, and it is doubtful, if he kept a set of books, that his accounts at the end of the year would show any profit. In 1916 prices had advanced to 16c. In 1918 there was a very light crop, and that was the first year that prices began to show a reasonable comparison with the prices of other commodities. Although everything else had gone up, grapes still remained at a low figure until 1918. In 1918 the wine men came out and offered $40 per ton for grapes. Then they raised the price to $45, and $50, and $55. That brought about a scarcity of grapes, and it was that fact that caused the grape growers of the Niagara district to look into the market for grapes. They found out that when we were getting $55 per ton for our grapes the grape growers in New York State were getting $110 and $115 per ton for theirs. It was that fact that gave rise to the present Grape Growers' Association.

That brings me up to the point of the aims and objects of the Association. They are as follows: First of all to bind all the grape growers of the Niagara district together. There is an Executive Committee composed of two representatives from each locality. The object is to have two local associations in each township. Where there is a shipping point they will meet at that point. The president and secretary of that Association become members of the parent association, and members of the Executive. By meeting through the winter we will impress upon our members the great necessity of giving more attention to the vineyards through better pruning, better cultivation, and better spraying and better fertilizing. There are some of the finest vineyards in America in the Niagara district, and we want to bring them all up to that standard. Twenty-five per cent. of the vineyards are grown up with weeds and rubbish. Next we want to become so strong as an Association that we can deal with the wine companies and with the buyers as an Association. We want to be able to say to them: we will produce the grapes for you and we will improve the quality, and we want to deal with you so that we can make some money, and so that you can make some money, and so that the public can get our grapes at a reasonable price. If a few growers sign contracts to sell grapes at 15c., it forces all the other growers to sell at the same price, because the dealers cannot compete with the men who have the contracts at 15c. Not only that, but we find that the buyers in the west seek by every possible means to have the prices cut to the lowest possible notch. What we want is to have the Association say to its members, "Don't sign contracts; the Association will endeavor to get a fair price and a uniform price for everybody." The trouble has been that at Jordan there would be one price, at St. Catharines another, and at Grimsby another. The men in the west and the buyers would hold up one district by the price in another, and so on, the results being that the price was forced down in all cases.

Growers have been induced by the dealers to cut their grapes too early in the season, and they have put on the market green grapes; that may be a good thing for a few dealers, but it is not a good thing for the business. We will try and see that the grapes are put on the market in an attractive manner and grapes that are fit to eat, and in that way we will increase consumption. What we want is a uniform price, make arrangements with the wine companies for so much and make arrangements with the dealers for so much, and then the dealers will go to the west on equal terms. Our object is not to boost prices or make the public pay more, but our object is to boost production, to give the dealers and the wine companies all the grapes they want at a reasonable price, and to give the consumers good grapes at a reasonable price.

We are going to make a study of the distribution problem. We find this situation: On the Toronto market grapes will be very low in price; we will find the same condition at Montreal; but if we go up to Listowel or Goderich or Seaforth the people up there are unable to get any grapes. The dealers will tell you "That is not our fault, we quoted prices to the retailers in these towns." There are cases where the public have to pay 75c. for a basket of grapes in the west that actually left the grower at 15c. There must be something done to put men in the district to solve the distribution problem. We have either to take hold of the U.F.O. system of distribution in the east or the Grain Growers in the west, or the dealers must take hold of it and solve it for us.

You would think it strange that grapes could be bought for $55 per ton in Ontario, and that in the State of New York they were getting $110 per ton. The wine men over there thought wine would be exempt from the Act, and they were willing to pay high prices, but when they were prohibited the price went down. In the meantime some of the buyers from the other side were brought over here, and they were surprised beyond measure to see our vineyards; they simply held up their hands in amazement. Now it was strange that although they were only fifty miles away they had no idea of our grape growing industry. We would have sold a great many grapes to these buyers this year but for the fact that their market went bad over there, and as a result, instead of taking over 200 cars, I don't think they got over 50 cars of grapes from us. They started off paying $80 per ton, and it went down to $65. We are going to make a bid for the early grapes on the American market, as our grapes ripen ten to fifteen days earlier than theirs. That being the case it appears to us that there is a market in the United States for our early grapes. They have the two and four quart package, and we have only the six quart package. We believe that if we put some of our early grapes on the American market in two and four-quart packages we have a ready sale for them. The market in 1918 for the two-quart package was 27c., and the four-quart 38c. to 42c., when we were selling our six-quart package at 30c. and 35c.

Another object we have in view is to endeavor to bring about a better understanding with the wine makers. What we want to do is to stop the St. Catharines buyer using the Winona grower as a lever to keep down prices in St. Catharines and *vice-versa.* We want uniform prices, better production, and we want better distribution, so that the consuming public all over Canada will have a good supply of grapes at a reasonable price.

MR. SHEPPARD: I live on the Niagara River, and I started this thing going. You will remember that our friend Mr. Fleming took me to task in 1911 because I said something about Free Trade. I am glad to know that our friends at Grimsby have wakened up and have found that there is a market in the United States. Our canning factories were paying 7c. per pound for cherries when they were paying 10c. and 12c. in the United States.

Mr. Livingstone will have to do a lot of work among the grape growers with regard to handling grapes properly. We should try and get our growers to handle them in the same way that they do in the U.S. The difficulty is that our people have not yet learned the necessity of taking the trouble to get their stuff up in an attractive manner. I have a telegram in my pocket from a firm in the United States which states that they do not want our grapes at any price because our growers will not take the trouble to pick the grapes properly and pack them in proper condition. We must look after all these little details if we expect to get good prices.

Mr. Fleming: I am as strongly against reciprocity to-day as I was when I spoke to Mr. Sheppard in 1911. I am still of the opinion that an alteration in the duty on peaches would be ruinous to the peach industry of this country. I am sure Mr. Livingstone would not like to see the duty taken off grapes?

Mr. Livingstone: You bet I would not. I have studied that free trade business very thoroughly during the last three months. If they are short in the United States we can afford to pay a duty of $16 per ton, but if we have no surplus we have none to ship. If they had a surplus they would simply glut our market. Our small surplus would have no effect on their market, but their big surplus would ruin our market.

Mr. Johnston: I would like to see more of our men go over there and study their conditions.

THE RELATION BETWEEN THE GROWER AND THE CANNING FACTORY.

Arthur Craise, St. Catharines.

During the past season the canning factories were falling over one another in securing contracts for the growing of tomatoes for 1919. It was thought that tomatoes were going to be a poor crop, but it turned out to be a banner year, and we only got started delivering when the canning factories said, "We are short of cans and we can only take a limited amount of your tomatoes," with the result that hundreds of bushels of tomatoes rotted on the ground. The grower had spent his money for manure and he had bought or grown his plants. We said to the canning factories, "You have these tomatoes under contract, you have got to take them," and they pointed to a clause in the contract that said, "Anything that renders this factory not able to operate makes this contract null and void."

What could we do? To give you an experience my brother and I had in 1917. We made a contract with a canning factory for our strawberries. After some discussion we agreed on the price 8c. We had one patch that was an early variety, and for that reason we did not want to include that patch in our contract, and so we agreed to sell 400 crates. It turned out to be a wet season and the crop was small. We had estimated our crop at between 800 and 1,000 crates. We shipped 226 crates of the early berries, and when we saw that the crop was going to be short we started shipping to the canning factory, and our total yield was only 426 crates, so that we only delivered to the canning factory 200 crates. We felt that we had done our duty in the matter. At the end of the season we went to the canning factory at St. Catharines to get our money, and they said, "We cannot pay you full price for these; you have not fulfilled the whole of your contract, and we have had to go out and buy berries to make up for the unfulfilled part of your contract at an increased price. You have got to reimburse us for that." They asked us for $114, which would leave us $320. We consulted our solicitor and told him everything, and he said, "You have no trouble in winning out in a case of this kind." We took the case to court, and the judge said that nothing could be given in evidence except what was in black and white as to the contract, and that was that we sold 400 crates of berries; and after we got through we had only $80, which was not a very big price for 226 crates of berries. You all know how the canning factories act. If there is a large crop they commence to find fault with your peaches or tomatoes; if the crop is small they will insist on your filling the contract to the last crate. If they cannot handle the crop they have a clause in their written contract that enables them to crawl from under. I do not think it is good business to sign a contract with a clause of that kind in it. The question arises, what is the remedy for this state of affairs? I claim that we should have co-operation among the growers, and we should make out our own contracts.

Mr. Livingstone: We never have any trouble with the Dominion Canners.

Mr. Craise: We have got to get organized in a thorough way as fruit growers. I think the U.F.O. Government will be the thin end of the wedge in getting the farmers and fruit growers to organize, and I then think they will have some encouragement, and in my opinion they have very little now.

Mr. Livingstone: The great trouble in the Niagara district is that the men there are interested in so many things, the peach grower thinks of nothing but peaches and the grape grower of grapes and the vegetable grower of vegetables.

Mr. Bunting: This matter has been going along for a number of years in a slipshod way, and the time has come when the producers should have something to say in connection with any contract that is framed for the sale of produce of the farm. I think a committee might be appointed by this Association to deal with the canners and secure a contract that would be fair to all parties.. The tomato growers east of Toronto received 25c. per basket more for their tomatoes than did the tomato growers of Niagara district. Prices should be uniform, and this Association should take some steps to see that these things were all put on a proper basis.

Mr. Fleming: I think this committee should try and arrange more friendly relations with the canners. The canners are the best friends we have. I have no interest in a canning factory. This year I had a contract with the Dominion Canners. They offered me a price of 6½c. per pound for my whole crop, which is equal to about $1 per basket. There was no trouble, and they took all my fruit as it came along. I had a few small peaches at the end of the season, and they said these are too small, we will be able to give you only 6c. for these, and I was very glad they did that, and I was quite willing to take the lower price; it encouraged me to grow good fruit. For 13 years I have marketed my own fruit, and this year I accepted this offer and sold them in that way. Go into any first-class hotel in this province and ask for peaches, and what do you get? California peaches. They are swamping our market. If we would only grow good peaches for the canning factory it would help greatly in advancing the peach industry in this province.

Mr. Craise: Supposing you had a large crop, would you like to be faced with that clause in the contract?

Mr. Fleming: Of course I see that things have not turned out well for Mr. Craise. I signed a contract for any surplus tomatoes I had, and I sent my early tomatoes to the market. They asked us at one time to delay sending in our tomatoes because the platform was all filled up, and they could not handle them at that factory, and they had to send them to another factory.

Mr. Rittenhouse: The relations between the grower and the canning factory should be most cordial, yet I think that the contracts are too one-sided. In some cases where the local factory could not handle all the fruit or tomatoes that were offered, they took the produce and shipped it to other factories that could handle it. It was very difficult for the factories to get help this year.

Mr. Livingstone: The contract should be so framed that the fruit grower would be protected when he did not have the fruit.

Mr. Bunting: You will fail to find anything in the canners' part of the contract in which he binds himself to do anything, but if you do not carry out your contract to the letter you are penalized, and that has been the trouble all along.

Mr. Sheppard: I have been dealing with the canning factory in our district and I have never had any trouble. Some of the managers are splendid good fellows, and others of them are not, and they are apt to make trouble. I once took a load of tomatoes to a certain factory. I had been delivering them for some time, and one day a car load of officials from Hamilton drove up at the same time that I was delivering my load, and the manager asked them to get up on the load and see my tomatoes, and they said that if they were getting stuff like that at all the factories they would have no trouble; within ten days of that time the same agent tried to find some excuse for refusing my tomatoes. Three years ago they started out to sell, and they told the wholesale people: "You buy your supplies early, and anything we cannot fill we will refund you 15 per cent. on the price." They agreed to fill all the contracts up to 60 per cent., and anything between 60 per cent. and 100 per cent. they would refund 15c. At a certain time in the year they said: "We cannot fill any more orders, here is your 15 per cent., but immediately they jumped the price to the wholesaler 25 per cent. They gave him back 15c., and charged him 25 per cent. I think we should protect ourselves so that if, under weather conditions, we cannot carry out our contract we will not be penalized.

Mr. Fleming: I move that the question of the relations between the canners and the fruit growers be left in the hands of a committee to be appointed by the directors of the Ontario Fruit Growers' Association. The motion was seconded by Mr. Allen and carried.

ARE GOVERNMENT GRADES DESIRABLE FOR OUR PEACHES?

F. A. J. Sheppard, Queenston.

This is a very big question, and I hardly know where to start. I am glad to see that the Fruit Commissioner is here from Ottawa. We work under different conditions in the Niagara district from what they do in different parts of the province or the Dominion of Canada. It is much more difficult to form grades for peaches than it is for apples or some other fruits. You all know that if you ship peaches to a market that is three days away they may not arrive there in perfect condition. Under the present conditions it seems to me almost impossible to establish a uniform grade for peaches. It is true that we might grade them according to size, but size does not always count. We know that different soil conditions make a difference in the size. On another class of soil we will have a better color, but not as large fruit. I do not think at the present time it would be fair to the fruit grower to establish grades, because he would have to come up to some standard either as to size or color of the fruit. Owing to labor conditions a number of growers are not cultivating their orchards as well as they might. I think it would be wise for our inspectors and our Association to try and encourage the fruit growers to turn out good fruit and to pack it in the very best and most attractive manner, and that the top of the basket will represent the contents of the basket, so that the purchaser will know what he is buying. He will know that there is no deception being practised. I think it would be better to do that than to try to establish grades for peaches. The difference between our fruit and that from the west has been commented on. I know that the west is producing better fruit than we are as far as size is concerned, but I do not see how we can remedy that state of affairs. Their conditions are different to ours. They have a rainy season and a dry season, and in some places they have eternal sunshine, and the man who brings water down from the mountains, and who has sunshine overhead can produce a very fine specimen of fruit. I do not believe we are going to be able to compete with our California friends for a long time. We find that California fruit takes the preference over Canadian fruit in Ontario on account of the color. The Elberta peach, which is the best we have, will not have color and still be in a condition that it can be peeled with a machine. The Lemon Free peach is as yellow as can be and still firm. If we let the Elberta peach get so that it has color it will be soft and break down. I think that is largely the reason why the California peach is more in demand than our own. Mr. Fleming told us that the Dominion Canners docked him half a cent on his Lemon Free peaches, and that does not give us very much encouragement to go into the growing of this variety.

THE GRADING OF PEACHES.

H. Fleming, Grimsby.

The peach industry is now one hundred years old. The first commercial peach orchard was planted by Mr. Dennis Woolverton, of Grimsby, who, in 1820, sold peaches on the Hamilton market. About thirty years later there were several commercial orchards in the Niagara district. From 1890 to 1898 the industry boomed and fell owing to a large quantity of poor grade fruit being thrown on the market. In 1914 the first shipments were made to Winnipeg. Shipments were made to Europe in 1909 and 1910 with more or less success. The industry cannot be said to have flourished during the war years. Many orchards were neglected through the scarcity of labor, and the trees have suffered accordingly. To those of us who have been so fortunate as to have been able to care for our orchards, there is a bright future ahead. If this optimistic forecast is to come true, however, there must be no lowering of the present tariff on imported peaches, and a Government grade of peaches should be established. This brings me to the subject on which I have been asked to speak: "Are Government grades desirable for our peaches?" The arguments which might be brought forward in favor of an established grade are too numerous to be mentioned at this time, the mere fact that as things are at present, a peach grower is practically himself the judge as to what constitutes a No. 1 peach. Nearly every grower is of opinion that there must be a percentage of No. 1 peaches in his orchard. We find that the peach which orchard owner A. grades as No. 1 peach, orchard owner B. may be grading as a No. 2 or cull. Such conditions are not in the interest of the dealer, the wholesaler, the retailer, or the consumer, and incidentally it is ruining the peach industry in Canada, especially in the west. I am of opinion that there should not only be an established grade, but that the minumum weight of the peaches should be marked on the package. This is a large and difficult subject, and should be gone into very carefully by all parties interested. I have spent much time on the question, and for the sake of discussion and in order to obtain the views of my fellow growers, I will only mention one grade and would suggest that the established grade of a No. 1 peach be as follows:—

"No person shall sell or offer for sale any peaches represented to be of No. 1 quality unless such peaches are sound, of one variety, and of good color for the variety, free from bruises and other defects: the minumum diameter of the peaches shall be two inches, the grade and minimum weight of the package shall be distinctly marked on the package, also the packer's name and address. Ten per cent. of the peaches contained in the package may be below the requirements of this grade."

While I have with me the Government standard eleven-quart basket, which will carry three packed layers of No. 1 peaches as above described, I have made no reference to the pack, as the probabilities are that the new Government standard of bushel basket will be more generally used in the future, and at the present time the heaped leno basket appears to be a legal package. If there is to be a great future before the peach industry it is necessary that we should give our trees more attention than in the past, have more enthusiasm and co-operation among ourselves, and be able to obtain healthy and reliable stock from the nurserymen. It is our duty, although it should not be, to see that our industry is fostered and protected by the Federal Government, that the literature issued by the Provincial Government in Great Britain is kept up to date; and that our representatives over there are the best men that can be had, in order that desirable settlers may be kept well informed as to the excellence of the climate of Ontario as compared with the damp and cold of Great Britain, and that it is not as is too often thought, a land of snow and ice, but a fertile land of sunshine, where peaches and grapes for commercial purposes can be grown in the open with profit.

Mr. Sheppard: Do you think it is profitable to grow peaches as large as you state?

Mr. Fleming: Yes, I think so. I would like to grow a three-inch peach. I would like to see two grades, fancy and No. 1. The large peaches could be put in small baskets.

Mr. Sheppard: The people would feel that it was a great hardship if they had to cull their peaches, owing to the labor conditions. They prefer to put them up as they do and sell them for what they are worth. We are hoping that in the near future labor conditions will improve, and then we will be able to cull the peaches and ship them in better condition. I do not think the time is ripe when we should tell the growers that they have to grade peaches.

H. L. Craise: I think if you force the grading of peaches on the average grower at the present time it will just have the effect of enabling the canners to buy them cheaper. I sold my entire crop this year, and I never had a more satisfactory season: they took them all. We will have to put our peaches on the market so as to be able to compete with the other fellow. The pit of an ordinary peach will measure from three-quarters to an inch, and if you confine the size to two inches, all you will have left will be twice the size of the pit. I had occasion to go into the Welch plant this fall and measure the pit of a peach, and I found that the pit of the Crosby is only half the size of the Elberta. The pit of an Elberta was found to be three-quarters of an inch across and one inch long, and the pit of the Crosby peach was only half that size.

MR. RITTENHOUSE: It appears that there are two different opinions with regard to this matter. We are liable to get a very full crop this year, and if the canning factories cannot absorb the whole crop, we will have to have some organization such as the Niagara Grape Growers have so as to enable us to get rid of the crop. I want to say that the growers throughout the district are very much in favor of establishing a grade for peaches. They are only trying to put off the time, but my opinion is that we cannot start too soon and get the grade established. I do not think they would agree to come down to two inches for the No. 1 grade.

MR. BAXTER: Dominion Fruit Commissioner: We are always behind any movement to help the fruit growers along. I may say for the information of some who have not gone into the matter that in so far as the grading of peaches is concerned, British Columbia requested us to include them in our grades, and our present legislation will cover that, provided we include boxes in our list of enclosed packages. When we do that the present grading will include peaches. We just take the present definition of No. 1 grade and apply it to peaches. In British Columbia they pack altogether in boxes, and they ask us to go a little bit further and state definitely what would be the minimum size for a No. 1 peach. This year we increased the depth of the box so that 96 peaches solidly packed constitute a No. 1 peach; they must not be less than the minimum size of the variety, the same as we have provided for apples. There are a great many fruit growers who are grading, although it is not compulsory. We inspect them the same as apples or any other fruit, but we have not been insisting on their being all of one variety. We take yellow fleshed varieties, they are all included in one. We have not been as particular in enforcing that as we have been with pears and apples. It might be possible if we were confined to the shipping of peaches in six and eleven-quart baskets to state the minimum number that a six-quart basket could contain. Then comes in the question of leno covers. There is no standard for them, and there is a difficulty. We have very open minds in the matter, and will be very glad to get behind any movement that will help along the industry as a whole. I have been in favor of grading for a great many years, and I want to call attention to one thing I have discovered in non-grading, that the good apples work their way to the top of the box.

MR. CAREY: I find in the city of Toronto market that 50 per cent. of the growers are grading their peaches and marking them as such. There is a high-class trade in Toronto to whom money is no object, and they want the good stuff. By grading we get a more honest package. There are stores in Toronto that will not take the poor stuff at all, but if you send them good stuff they will pay for it.

MR. SHEPPARD: We have to judge by the money that comes back to us, and while I agree that it is a good thing for the consumer to have a good article, we do not now get the good money for putting it up. It is a fact that while we do spend double the time in packing these peaches, some other man gets the extra money for our extra work.

Mr. J. M. Creelman: During the time I was at Grimsby at the Cold Storage plant, and when I was in British Columbia, I had it continually thrown up to me that when they bought a car load of fruit from Ontario they never knew what was coming. They would buy a car load of peaches from Washington or California or British Columbia, and you know that there are so many boxes in that car, and so many No. 1; and you know there are 90 peaches or less in each box; or if they are No. 2 there will be from 96 to 112. Then if a customer comes into the warehouse for small peaches you give him a box of No. 2. I do not know how you are going to standardize in Ontario, as you have so many different packages and so many different varieties. That is why you will find California and British Columbia fruit for sale in the stores in Toronto during the season.

Mr. Fleming: I think the resolution committee should bring in a resolution as to the grading of peaches.

Mr. Sheppard: I am heartily in sympathy with the movement.

THE FRUIT SITUATION IN LAMBTON COUNTY.

W. P. Macdonald, Petrolia.

I am pleased to know that this Convention is interested in learning the extent and outlook of the fruit situation in Lambton Couny. First, because in Lambton county fruit raising is a fair sized industry giving good promise, and secondly, because the fruit industry in Lambton is worthy of development, and has not yet reached a small fraction of the development or extent to which it will attain in the course of time. The fruit industry in Lambton is only in its infancy.

Lambton County is admirably situated for the growing of all tender fruits. The fruit section is situated along the northern portion of the county. This section of the county is on the same parallel of latitude as the section of country from Hamilton, St. Catharines and Welland, while the greater part of the county is situated below the 43rd parallel of latitude. The presence of a large body of water (Lake Huron), extending along the entire length of the north-western side of Lambton County, has a modifying and moderating influence on the climate.

The general slope of the land in the fruit section of Lambton County is northerly; a particular feature sought by all experienced fruit growers. A northerly slope retards unseasonable growth in the early spring and insures a greater absence of injury to fruit buds in winter than where trees are subject on a southern slope to the direct rays of the sun.

Throughout the fruit section there is what is known as the "ridge." This is a ridge of soil passing clear across the county. The soil varies from loam with a gravelly subsoil to straight sand and gravel. Peach trees do exceptionally well on the ridge formation, while on the loam soil fruits of all kind do well.

Along about the years of 1910 to 1912, and previous to this time, Lambton County fruit growers planted heavy to peaches. These trees were coming heavy into bearing about the time the war broke out. The result of war upon the fruit industry is well known to you all. This meant a shortage of labor. Therefore, orchards became neglected. Spraying, pruning, and the working of the lands between the trees was neglected. To again multiply the difficulties of the fruit growers during the spring of 1916-1917, curl leaf seriously attacked the peach trees.

in many cases defoliating entire orchards. The lack of spraying and the attack of leaf curl so weakened the vitality of the trees that during the cold spell in February of 1918 many peach trees were winter killed. This only happened in orchards that did not receive the required attention, spraying and cultivation, during the spring of 1916 and 1917.

The apple orchards in Lambton throughout the fruit district are in a flourishing condition. Many new orchards are now coming into bearing. These young orchards were interplanted with peaches as fillers. The peach trees have served their purpose and have returned a revenue, and are now gradually being removed.

The growing of strawberries, raspberries, and small fruit is followed to some extent in the localities near Arkona and Thedford. This branch of fruit growing is proving very successful and remunerative. New and larger plantations are being set out where farmers have their own labor or can easily secure labor for picking.

Lambton offers unequalled opportunities to the young farmer wishing to engage in fruit growing. In a great many cases farms can be purchased which include ridge land as well as loamy soil. This means a great advantage over people in sections which are specializing in only one or two branches of the fruit industry. In case of a failure in one crop, others are left to insure a revenue each year. In fact, only in isolated cases do we find a specialized fruit grower in Lambton County. Fruit growing is carried on in conjunction with mixed farming.

That there will be a revival of a period of peach tree planting in Lambton County in the very near future is my candid opinion. The quality and early maturity of Lambton's fruit is well and widely known. The success of and remuneration from fruit growing from the past experience is also an incentive to the fruit grower to enlarge his plantation.

Throughout this period of reconstruction, Lambton County should attract large numbers of prospective fruit growers. The climatic conditions, the soils of Lambton, the early maturity and quality of the fruit, the unexcelled marketing conditions, are second to none in any of the general fruit sections of Canada.

Lambton County requires to attract to the fruit section settlers who have a liking for fruit growing. There is all to be had in Lambton, coupled with cheap land, which goes to make a successful fruit growing district. The greatest drawback to the industry to-day is the lack of a class of citizen who desires to engage in fruit growing as the major portion of his farm operations. Lambton is not, as yet, a formidable competitor with the Niagara fruit district. The further development of the industry throughout the so-called fruit district is early anticipated by all fruit growers. Quantity will not be the outstanding factor; the quality and coloring of the fruit will not, however, be surpassed by fruit from other sections.

I would like to say a word in reference to the orchards in the older, or more general farming sections of the county. From observations in Lambton, Middlesex and Kent counties bordering on Lambton it is an outstanding fact that the orchards of our grandfathers are rapidly becoming a thing of the past. The days are past when every farm home has its supply of apples taken from the farm orchard stored away for the winter. The general farm orchard is dead, or is dying from neglect. I believe at this Convention something should be done to encourage the general mixed farmer to again plant out at least an acre or two acres of mixed orchard upon his farm. The having of an ample supply of fruit on every farm is an attraction to farm life, a business proposition, and adds to the health and prosperity of all.

SOME ORCHARD PROBLEMS.

PROF. F. C. SEARS, AMHERST, MASS.

I lived ten years in Canada, and therefore feel fairly well at home, and it takes a very small excuse to get me back again. I look back to the ten years I spent in Nova Scotia as the most pleasant years of my life. I am going to talk of things that will be of some help to you in this section of the country. Some ten years ago Prof. Waugh, of our Agricultural College, started an orchard about four miles from the orchard at Amherst, and I have told Prof. Butterfield, of our College, that the time is coming when the people will insist on the professors in agricultural colleges having a farm. We have too many men in our agricultural colleges who would starve to death on a farm, and the time is coming when in order to hold down their job they will have to have a farm, and know how to run it. We have this farm together. It is not a general farm, for we are, first of all, fruit men. I sympathize very strongly with what the last speaker said as to the value of an orchard on a farm, but I am going to talk from the standpoint of a fruit farmer, because that is the line in which I have been experienced. The first problem I have on my notes is the question of fertilizer. I do not know of a question that is more difficult for a fruit man to settle, or one from which the fruit men have had less help from the agricultural colleges and experimental stations. If you ask about the question of spraying, we have dozens of lessons that we have been taught by the experimental stations. In fact, most fruit men will admit, when you get them in a corner, that most of the things we have learned as to spraying have come from the colleges and experimental stations. It is the same on the question of pruning, but when you come down to the question of fertilization they have done us very little good. Very frequently the reports are conflicting, one station will say one thing and another station something else. The Geneva Station, in New York State, is one of the best we have on the continent; the Professor there does not think much of fertilizer. He makes the statement that if the block under experiment had not received an ounce of commercial fertilizer they would have been just as well off. The Massachusetts Station has had almost the very opposite result. There is on the college ground an orchard about 35 years old and they have run experiments in that orchard for about 25 years, and the interesting thing about it is that it was started by Dr. Gueston in an attempt to solve the effect of the different kinds of potash. They used muriate of potash, sulphate of potash and wood ash, and barnyard manure, but I do not think they helped us at all on the question of potash. The interesting thing to me is that the check block that did not get anything has not done as well as the block that got a little wood ash and some barnyard manure and some bone meal.

We have a rather lightish soil and we have to do things differently from what they do on their type of soil. We have come down to this, that we pay most attention to three things: we have got to have nitrogen on our light soil. We have a block of Wealthy apples on this light land and they have been in ten years; this spring they blossomed very heavily and I saw that we were going to get a tremendous crop, and I said the only thing we could possibly do was to fertilize that heavily. I went to a friend who was in the business and as a result of his advice we put 500 lbs. per acre of amophos; I don't know whether you can get that up here yet or not. It is a combination of phosphoric acid and nitrogen.

In addition to that we put on 300 lbs. of nitrate of soda and 200 lbs. of flue dust. We put it on in three applications. We first put on one-third and we did not think the trees were responding, and we put on another one-third, and then another. The result was that these trees bore a tremendous crop of fine large fruit and well colored. They would run considerably larger than the Baldwins, and they hung on the trees well for Wealthy apples. We sold $500 worth per acre off the block. It was a block of land that we bought for $25 per acre. Two years ago we sold $300 per acre off that same land. And still some people think there is no money in orchard land.

Q.—What did the fertilizer cost per acre?

A.—We paid $105 per ton for our nitrate of soda and we paid $155 for the amophos. I think it was $50 or $60 a ton we paid for the flue dust. We know that it paid for itself, and that it was profitable.

Our farm is situated on a road that runs from Springfield into Vermont. It is one of the State Highways. We have a good local market, and we have sold between $2,000 and $3,000 right on the road side. We are selling everything we grow this year right on the place; we have not taken anything off the farm at all. We have unusual conditions with respect to marketing. Our soil is light and we have to fertilize heavily. Our problem is how to get sufficient fertilizer so as to make our trees grow on this light soil. If we can do that we are all right because we can get big apples of good color.

Q.—Did you do anything to add humus to that soil?

A.—No, we have 430 acres on the farm and 120 acres of orchard. One of our troubles has been the getting of humus and that is evidently going to be our trouble right along. This land we got for $25 per acre was poor, light land with a scant sod on it. Last year we got a very scant crop of barley and this year we got a fair crop of millet. We have sown everything that we could think of that would give us a fair amount of material to plow under.

Mr. Kydd: Tell us when you put on that fertilizer?

Prof. Sears: The first application was made right after the trees blossomed, and the second one was within a month after that, and the third one was rather late, well towards the last of July, but we got plenty of foliage which, I think, is a good thing for next year.

Q.—Would you follow that practice if you could get barnyard manure?

A.—Let me put that off. I am coming to barnyard manure in the end.

Q.—Would you advise applying that fertilizer any earlier?

Prof. Sears: I think it might have been put on before the trees blossomed. If I have a block of land that will not grow weeds I sit up at night and worry about it. We had one block that would not grow a good crop of weeds—we had one block that was sour—and I went to Professor Haskins of our college and asked him to test it. He told us it would take five tons per acre of ground lime stone to neutralize that land. I think that was one reason why we could not grow a cover crop. The last thing I did before leaving home was to call up the Boston & Maine and tell them to deliver two car loads of lime at the farm. The ground lime stone costs us $4.50 per ton in bags or $2.75 in bulk, and the freight rate is $1.10, so that we can lay it down for about $6 per ton. We have to pay $10 per car for shunting. Last year we spent $750 in fertilizer, and next year we are planning to spend $2,000. I do not think there is anything we can do that will give us better results. We are using a lot of acid phosphate. Dr. Twitchell has had better results from acid phosphate than anything else, and he has been testing out a number of things.

The next item I have is barnyard manure. We have a lot of farm land on which we have grown hay and it has been profitable. It takes a good deal of team labor which helps us out when the team is not at work at anything else. We have not got any live stock at all except some hogs, and they seem to work in satisfactorily with the other work. We had a barn where we could tie up 35 head of cattle and we have tried to fill that barn with stock in the autumn. We have gone around the country and bought up dry cows. This year we have gone in with a cattle dealer, and he is going to buy cows with us. We furnish the barn and the roughage and he will furnish his own grain, and he pays us $2 per week for the roughage. He will put in 20 or 25 head, and that, with the pigs, will give us a fine lot of manure in the spring. There is no question that the problem is what kind of live stock we ought to take on. There is no question in my mind that we ought to have some live stock. We have seen marked results where we have been able to use barnyard manure. If we could get all our blocks up to the point where they would grow weeds we should not worry very much. We have thought of two or three different ways of getting barnyard manure. One way is the way we are doing now, boarding cows for a live stock man. We get the manure and that is really all we are after. We also get fair sale for the hay, and it keeps one of our men busy in the winter. I believe the best thing is to ship in Western cattle from Chicago or Buffalo and fatten them during the winter; the trouble about that is that we do not pose as expert stock men.

My next item is tractors. We have a tractor that we do not think much of; I do not mean tractors in general, but this particular kind. I do think that a tractor is a thing that we must have in the orchard, and we are going to have a real tractor next spring. Mr. Mortimer, one of our trustees, who has a 150 acre orchard, does all his work with a Fordson tractor. There have been 22 men killed with tractors in the State of Michigan. If you strike a real heavy snag the machine turns over. I have broken many a wild colt on the Kansas prairie, and the thing is to get off before he falls on you. I am, therefore, inclined to get a Fordson and run the risk of our Polish boy getting off before it fails on him. The Cleveland tractor will not kill anybody, but they say the caterpillar treads wear out on certain land. A criticism I have had of the Fordson is that it has no governor on it, and if you have a raw driver on it he is apt to get you into trouble.

The labor question is a serious one on a fruit farm, and that is one of the reasons why we are going to get a tractor; because it will enable us to dispense with one teamster.

There is nothing that will get you into a worse corner than to be without help, or to have poor help. The question of labor is one that we have given a great deal of attention to, and I could talk for a whole hour on that question alone. We employ a number of men, and for that reason our position is different to that of a fruit grower who only employs one or two men. I think our problem is easier to solve than that of a man who only employs one or two men. We try to treat our men as neighbors and as human beings. We have four different farm houses in which we have the men quartered. We like a married man best, and we must provide him with a house. If he wants anything done to the house we do it for him. We do not let them grumble for a year before we do anything for them. I told the foreman the other day to go around and inspect the houses and see if there was anything to be done. We have a standing offer with the men, that any time they want paper or paint we will furnish the material if they will put it on. They very often do things of that kind, and we try to give them good comfortable houses to live in.

We have been liberal in the question of wages, but we insist on good work. If a man does not work well we do not want him, but if he is a good worker we take care of him. We never dock a man for time off if he is sick. Last fall when the influenza was going around I had to run the whole show myself. Prof. Waugh had gone in for military work, and I tried to make my foreman, a young man of about 30 years of age, believe that it was just as patriotic to grow produce as to fight; but finally he came around to me and he said "Professor, I am going to enlist; I cannot stand people saying to me 'How is it that you are not in the army?'" That left me with not only my own job to run on the farm, but the college as well. I paid one man for three weeks when he did not do any work, and another man for two weeks. I think that is a good policy, it certainly has borne fruit in our case. We have men there that do not think anything of leaving the farm with a truck load of apples at three or four o'clock in the morning; and before we had the truck they would often leave the farm at one o'clock in the morning. Last year when I was alone one of the Polish men was handling the sales and he took far more interest in getting good prices than I did.

Just one or two things about handling them out in the field. Of course, if the men know they are going to be well paid and treated right they will have an interest in the work. We try to get them interested in what they are doing. For instance, if we have a man out pruning we try to get him interested in the number of trees he can prune in a day. We do not carry that so far as to have him do a poor job. I may go to Mike and say: "How many trees have you pruned to-day?" and he will say so many, then I will say: "Do you remember, Mike, that on this block last year we pruned so many?" And he will say: "Yes, we will have to try and do better to-morrow." Of course, I always go around looking at the quality of the work. Get them interested in the spraying, how many gallons of spray can they put on in a day, and sometimes I say: "You are putting on too much, better go more slowly." When they are packing it is just the same. Let them see that you know how much they did last year, and compare that with what they are doing this year, and it will be a big help. We always try to have our men so that we will know who is doing certain work. Start one man on one row picking and another man on another row, and then if poor work is being done you know who is doing it. In teaching at the college I will take thirty or forty boys out into the orchard and start them off in that way, and then I can tell what boy is doing good work or bad work and place the responsibility where it belongs. I do not like to see the whole gang—four or five men working on one tree, then if anything is done wrong nobody did it. "It just did itself," as the youngster said.

Q.—What do you pay in wages?

Prof. Sears: Our average is $2.75, and we furnish them with a house and feed their cow for them, and give them all the land they want for a garden. Wages have been going up steadily since we started down there. We are in the tobacco district, and it is nothing for them to pay their men $4 and $5 per day. We have one man that gets higher pay. Like all Polish people he has twelve or fifteen of a family, and they get a chance to work on the place picking fruit. He says he can save more money with us than he could when living in town, although he does not get as big pay. If we pay a man $3 per day that means $18 per week for him. Of course, as a matter of fact, there is not much Sunday work in the fruit business. That is why it is easier to get men on a fruit farm than on a dairy farm.

Q.—What are your hours of work?

Prof. Sears: Ten hours a day. I do not know how long we shall keep that up. A number of our men work a good deal longer than that. The man that drives the truck will leave the farm early in the morning, and he puts in more than ten hours a day. We recognize that, and give him a bonus now and again. Of course, we have a number of factories around us where the men work eight hours a day, but I think ten hours a day on a farm is as little as a man can get along with.

Q.—How do you find daylight saving affect you?

Prof. Sears: We like it fairly well, but I understand that farmers as a class do not like it. I want to say a word on trucks: We are twenty-five miles from Springfield, and we are eight miles from Northhampton. As a matter of fact we sell everything on the farm, and if we deliver at Springfield we get paid for delivering. Up to this year we got along without a truck, but this year we said we must have a truck, and after looking around we finally decided on a one ton truck. We can get eighty flaring peach baskets on our truck, as we have a special body. We can go to Springfield at the rate of twenty-five miles an hour and come back at thirty miles an hour. One day the foreman went to Springfield with a load and came back to the farm and stirred things up, then went to North Hampton and back, and then to Amherst, four miles from the farm, and he was back on the farm at four p.m. When we had the team it would go to Springfield and back in a day, but would not be much good the next day. The truck is too big to take out in the orchard, and we have planned to buy a small truck or second hand Ford, so that we will have a truck for getting things out of the orchard.

The next question is the question of nursery stock: I was interested to learn from Mr. Kydd that there was not much enthusiasm here in setting out trees. Most everybody is doing it in our section. In fact, we have got to the point where we cannot get nursery stock; they are all sold out. We do not get any quotations for trees under $75 and $90 per one hundred. On our farm we have narrowed down to four or five varieties; we have the Oldenburgh, which is harvested in August; the Wealthy, which is harvested in September; the McIntosh, the greatest apple ever introduced. Ontario has the credit for introducing it, but I think we can grow better McIntosh apples than you can. However, I am certainly proud of Ontario for introducing it. We are selling some of our apples this year at $15.75 per barrel. Then we have the Baldwin and the Wagener. They are all red apples, and I have been converted during the last ten years into growing nothing but red apples. We have the Palmer Greening, one of the finest apples ever grown, and as good an apple in its way as the McIntosh, but it is yellow, and we can sell the McIntosh for $15.75 easier than we can sell the Palmer Greening for $4 or $5. We have 500 Palmer Greening's on the place, and I wish they were McIntosh's. We are considering the Delicious. It is not a variety we can afford to grow generally, but the name of it is enough to make the average consumer think he wants it, and we are going to set out 100 trees next spring. The McIntosh will grow a more handsome tree without pruning than the Wealthy will if you sit up nights with it.

We planted 30 acres the first year and we bought 650 McIntosh apples. They grew beautifully, and every time anybody came within four miles of the farm we took them down and showed them this block of McIntosh apples. About the fifth or sixth year some of them blossomed, and we used to stand around and watch these little apples grow. When I got back from my vacation the foreman called me up and he said: "I wish you would look at these McIntosh apples," and it turned out that none of them were McIntosh. So that I am personally interested in trees true to name. When we found out what the stock was Prof. Waugh, who knew the firm we bought them from, wrote down to them and they wrote a very nice letter, and said they would come right up and take the matter up with us. But just then their chief was running for the Legislature and he could not get away. We knew what Southern politics were, and so we waited and did not hear anything from him for a while. Then we wrote again, and he replied that the election had been pulled off and he had been declared not elected, but he could not get away until the re-count was over. We waited until we thought the re-count would be over and then we wrote again, and he replied that he had been counted in and could not get away. By that time we knew that he was not very anxious to come up, and we knew that a Northerner going into a Southern state and suing would not get anywhere, particularly when the man we were suing was in the Legislature, and that is the position it stands in to-day.

I am now interested in nursery stock true to name, and this is what we are doing: I don't know whether it is the best way out or not. We have tried two schemes: one is buying Northern Spy or something like that, and budding them. The trouble about that is that sometimes the buds do not take, and if you set out a nice block of trees and the buds do not take it is a big loss. We have gone from that to putting in a nursery, and then we can discard the trees on which the buds do not take, and that is working fairly well. A friend of mine is setting the trees as we do, and then whip grafting them, and he says they hardly miss a tree. If we could get a nurseryman who would be sure of his stock that would be all right.

I used to know years ago just what should be done in the pruning line. I could tell what ought to be done and how it ought to be done, but the older I get the less I know about it. I want to suggest to you two or three things that I think are sound: In the first place, the proper time for pruning. In a talk I gave the Nova Scotia Apple Growers I told them that I thought the proper time to prune was in March and April, and I still think that is good sound teaching from a theoretical standpoint. As a matter of fact, when you get into the orchard game to any extent pruning is one of the hardest things to do, and requires the most brains and the most experience. We have 120 acres of orchard to prune, and we do not have many men that we can trust to get into these trees. So we are starting pruning a little earlier and we are planning to start pruning our trees next month. If the orchard is small enough so that you can start pruning in March, I think that is the proper time, but when you have a lot of pruning to do and only a few men, then you must start earlier.

We have narrowed down to this, on our young trees from the time they are set out until four or five years, we prune as little as possible, but we do some pruning every year. I think it is a great mistake not to do that. When they get down to nearly bearing, then we prune them out to the shape we want them. In our McIntosh apple trees, up until they are six or seven years old we do not prune very much, but at that time, when they are bearing we prune them exactly as we want them. The Wealthy is a variety which tends to get small as it gets old, and we prune them very heavily, and give them thorough cultivation in order to keep up the growth, and so far we have been entirely successful.

MR. KYDD: How late do you keep up the cultivation?

PROF. SEARS: We plow our land in the fall or spring. We do as much as possible in the fall, because on account of our land being flat we cannot get on it early in the spring. I do not like to plow until the leaves are off. I always feel better if I have thirty or forty acres ploughed in the fall. We stop the first week in the month of July and put down our cover crop. In order to get a good growth of cover crop you must get it in as early as that. If I had my land rich enough I would not cultivate. The Marshall orchard in Massachusetts is the best I have ever seen, and he does not cultivate at all. He is just outside of a large city, and he gets street sweepings and scatters all over his orchard. He keeps his grass fairly close: he grows almost altogether the McIntosh apple, and he grows great big apples. He has a heavy soil.

We planted a thousand dwarf trees, and we are not very enthusiastic about them. On the other hand I have large sized dwarf trees at the college which are doing very well: they certainly have borne wonderfully. We have taken thirty bushels off six trees. I believe if a man had a commercial orchard with that kind of tree it would be a paying investment. The McIntosh, the Wealthy, the Oldenburgh, and the Baldwin have done best with us. We have one big firm who planted dwarfs, and they say if they were doing it over again they would not plant dwarf trees. I am not at all sure if I were planting again, but I would try the dwarf as a filler.

MR. KYDD: Would it be a good plan to cut in on the sides of our trees as well as the top; we have some very wide trees in this country?

PROF. SEARS: That would depend on the type of tree. We always make a severe pruning on the side branches of the Burbank plum. We have some varieties of apples that would require the same treatment. We prop up the trees when they are loaded. I do not believe you can thin the fruit off a tree down to the point where the tree will carry without any propping.

MR. ROBERTS: What is the height of the head of your trees?

PROF. SEARS: The bulk of our trees are two feet: we have some six and some eight inches. I have always thought that the two foot head was the proper thing. I think there is a lot to be said in favor of the low head.

Q.—Do you prune the roots?

A.—I have seen people cut off the roots and plant with a crowbar instead of a spade. I do not approve of that.

Q.—It it better to head high?

A.—I think you get a better circulation if you head higher. I would expect to get more benefit from putting them further apart. At the present time I would not set anything under 45 feet apart, our land is not heavy and it will not grow a big tree.

Q.—What do you do about mice?

A.—All the way from nothing to good protection. We started in giving them no protection up to six or seven years, and I do not think we lost a dozen trees. Then one winter they came down on us, and we lost 150 trees, and since then we have been protecting our young trees. We use building paper altogether, it will only last one year. In the Marshall orchard they use heavy wire mesh, they have to have protection there all the time. I think building paper is as good a thing as you can use. If you want a permanent thing, I think wire is the best.

RESULTS OF SPRAY TESTS IN NORFOLK COUNTY.

W. A. Ross, Vineland Station.

Last year the Dominion Department, with which I am connected, and the Ontario Fruit Branch, commenced a series of investigations on spraying, which will be continued over a period of three or four years. Our main object this year was to compare the Ontario spray schedule with two spray schedules which have given excellent results in the Maritime Provinces. The tests were made in a thirteen acre orchard in Simcoe County, the Government experimental orchard. We also made a test in a smaller orchard, of younger trees, at the Vineland Experimental Station.

The orchards were divided into three blocks, and were treated as follows: The first block was sprayed with the Bordeaux mixture 3-10-40. In preparing this we dissolved the bluestone over night in the usual way. We used builders' lime.

For the second spray we used, Bordeaux mixture 2-10-40, and arsenate of lime, 1 pound to 40 gallons, and for the third spray: sodium polysulphide (1 part sulfocide or 1 lb. sol. sulphur), arsenate of lime, 1½ lb.; hydrated lime, 5 lbs.; water, 40 gallons.

Fourth Spray: Bordeaux mixture 2-10-40, arsenate of lime 1 pound to 40. The next block received three regular applications of lime sulphur: First, lime-sulphur alone, and second, lime sulphur and arsenate of lead; the third application, lime sulphur and arsenate of lead. This block did not receive any fourth application.

The results on the young trees in the Vineland orchard were very interesting. In the two blocks sprayed with lime sulphur solution, there was a slight amount, not in any way serious, of spray injury throughout the block; whereas, in the trees sprayed with Bordeaux mixture there was an absence of such injury. In the Duchess variety there was a very marked difference between the trees. The Duchess sprayed with lime sulphur, much of the foliage was singed, and then again much of it was small and curled, and in the trees sprayed with Bordeaux the foliage was large, and much more vigorous in appearance. I took several men through that orchard at Vineland and they spoke of the very marked difference.

In the large orchard, composed principally of Baldwins, Spies, Greenings, and Russets, there was very little difference in the condition of the foliage. Here and there in the lime sulphur block there was a slight amount of what we call gun injury, which I think was caused by a defective gun, which simply refused to throw a mist. We discarded this gun before we went on spraying the other blocks. Some men who went through this orchard thought they could notice a difference in the foliage, others saw no difference. In so far as the control of scab and codling moth and other insect pests is concerned, the one gave as good results as the other. Where we used the Bordeaux mixture in the case of Baldwins there was no scab at all. Where we used lime sulphur we had about 3 per cent. scab on the Spies and none on the Baldwins. Strange to say, we had more side-worms in the Bordeaux block, but I do not think the spraying had anything to do with it. In regard to the appearance of the fruit, especially the Baldwins, and to a lesser extent the Spies, on the trees sprayed with lime sulphur the apples had a finer appearance and the color was brighter.

The results we have secured from these experiments over several years leads me to believe that the following spray schedule is an ideal one for Ontario:

First Spray (with Oyster Shell Scale or Blister Mite): Lime Sulphur 1 to 8 or 1 to 9. Apply not later than the buds are bursting. With no San José Scale present and practically no Oyster Shell Scale or Blister Mite use: Lime Sulphur 1 to 20.

Second Spray: Lime Sulphur 1 to 40. Arsenate of Lead (powder) 1-1½ pounds, (paste) 2-3 pounds. Apply immediately before blossoms burst and when the little leaf tissues break out, or project out about a half inch.

Third Spray (usually the last spray in Ontario): Lime Sulphur 1-40. Arsenate of Lead (powder) 1 pound, (paste) 2 pounds. Apply immediately after blossoms have fallen.

Mr. Kydd: What is the particular object of putting on Bordeaux for that second application?

A.—Because it gives you a nicer foliage, and then it is really a better fungicide than lime sulphur, and it stays on much longer. In certain sections it may be necessary to have a fourth spray ten or twelve days later, and here again I would use lime sulphur because of the fact that it gives you a much better finish than Bordeaux. It gives a brighter and snappier color to the fruit. It might be well for some of you to give this schedule a trial. To those of you who are well satisfied with the three sprays I would say go ahead with your usual formula. After all, our peculiar problem in Ontario is not so much what spraying material we use as how can we induce men to spray at the right time, and to spray thoroughly and systematically.

Mr. Kydd: Do you just let a slow team keep on going when you are spraying?

A.—I stop until I have finished spraying the tree, and when I am through spraying that tree, I go to the next one.

J.—How long do you stop at that tree?

A.—I never keep track of the time.

Q.—Do you stop the horses twice or once?

A.—It all depends on the length of the hose.

Q.—Do you like to ride on the tank, or do you want a long hose?

A.—If you have a good spray gun you can do what you like with your spray material, and you can put it where you like.

Prof. Caesar: For the San José Scale, you must be on the ground when putting on the spray because you have to cover the whole tree.

A.—I like to be on the ground, but there is the question of labor: you cannot get men to do it, and you can do a very good job from the tank. I do not think it is advisable to refer to any of these new materials until they have been tested for at least three years.

Prof. Caesar: This year I was asked to co-operate with Mr. Ross on this matter. I have spent eight years on fruit, and I feel that it is time the vegetable men were getting more attention in the investigation of insect pests, and I wished to spend nearly all my time on vegetable tests. I am quite in accord with the results secured by Mr. Ross, and his recommendations are exactly as I would like to make them myself.

I believe that in this province we should use Lime Sulphur for the first spray; because we have in a good part of the province the San José Scale, and we have quite a lot of the Oyster Shell Scale. With that as a fact, and with quite a number dropping the first spray: if they use other than lime sulphur they will not get results. I would strongly advise that first spray. It is the first spray more than any other that does the work. I went into three orchards where the first spray was put on and those orchards had clean fruit and foliage.

You cannot omit any one of these sprays and be sure that you are going to get the best results.

A great many men in spraying use too large an opening. By using a small opening you will use much less spray material and do a much better job, although it will be a little slower. Stand back well from your tree. I am satisfied that the second spray is well worth the trouble, and you will get better results from the Bordeaux mixture.

For the third spray I should put on Lime Sulphur, but do get it on at the right time, you cannot be too careful in watching the time. Two days might make all the difference in the world.

MR. KYDD: How many gallons will it take to spray a fully grown tree?

PROF. CAESAR: With the old nozzle I used to think that a great big apple tree could not be sprayed with less than ten gallons. Now, with the gun, I think possibly I can spray it with seven gallons.

A MEMBER: I am not a very large apple grower, I have only about fifty trees. I had a fairly good crop of apples this year. I sold them in St. Catharines, and the man I sold them to said: "Where can I get some more apples like these?" I recommended him to a neighbor, and he said: "That fellow sprays in such a way that he might just as well not spray at all." That is true, you might just as well not spray at all if you do not do it right.

THE CHAIRMAN: We have learned this morning that we must give our orchards the very best care. I think we should spend more money on our orchards than we have been spending the last few years. You can get labor if you pay enough and use the men right.

MR. KYDD: How much is it costing you per ton to lay the manure on your orchard?

THE CHAIRMAN: Very close to $4 per ton. This year the manure will cost $2.40 per ton laid down on the siding.

Q.—Do you think it is profitable to pay that for it?

THE CHAIRMAN: I do. We are afraid to pay the money, but we will get back $3 and $4 for every dollar we spend.

INTENSIVE STRAWBERRY CULTURE.

P. H. WISMER, JORDAN STATION.

Strawberries and raspberries have become the main source of my yearly income. There are few products that equal the strawberry for profit. I must confine my remarks to my own soil, as I have no practical experience outside of my locality. My soil is a deep sandy loam with 18 to 24 inches of gravel below the loam, and clay below the gravel at an average depth of about six feet.

LOCATION OF SOIL: Almost any location on the farm that will grow a good corn crop will do for strawberries provided the soil is naturally well drained. I would recommend the use of lime. My land has been limed occasionally for years. I prefer a one year old clover sod, with a heavy application of well rotted manure, say 40 tons per acre, plowed down about the last of August. This should be treated as a summer fallow and plowed again late in the fall. I have also frequently used an oat stubble by manuring heavily, plowing down, and seeding with oats, which in turn were plowed down as a green crop late in the fall. Much, however, depends on previous preparation and on the richness of the soil for best results.

SPRING PREPARATION: As soon as the land is in good condition, and suitable plants may be obtained which have made sufficient start from their dormant state, we begin preparation by plowing. The land is then rolled and disked with the disk lapping half to leave the land level. The drag harrow is then used, followed by the roller which leaves an ideal surface soil to set the plants in.

MARKING: A field marker of proper width, such as is used for corn, is the quickest way.

The matted row system is giving largest returns, the rows being 3 feet 6 inches and 4 feet apart. Plants are set at 20 to 24 inches in the row.

PLANTS: Select the best row in your one year old patch, digging up the whole row, using a close tined fork. Select only the vigorous plants, discarding the smaller ones and plants with the dark roots. We never clean the plants, considering it a useless and possibly harmful practice. We avoid unnecessary handling. The strawberry plant is quite sensitive to sudden changes of temperature and excessive moisture. In Lincoln County, we do our planting about the first week in May, conditions being favorable. the most popular method of planting seems to be with a spade. A man and a boy are employed to do the work. The man takes the spade, pushes it into the ground at an angle of about 45 degrees, pressing it forward until the opening is sufficiently large for the boy to place the plant, holding it firmly until the spade is removed and the soil firmly pressed around the plant. Great care should be taken to have the crown of the plant just at the surface of the ground. Past experience has proven to me that plants set by hand in a light furrow have made a much better start than those set by the spade. Two men will plant just as fast by hand as by the spade.

CULTIVATION: Cultivation should be started as soon after planting as possible, and continued once each week and after each rain to hold the moisture. All blossoms should be hand picked. The weeds should be removed as fast as they appear. It is important that all the first runners be laid and held in place by covering with a small quantity of earth, placed back of the terminal bud. I would recommend the use of phosphoric acid in some form where heavy applications of manure are being made.

My largest yield was obtained by the use of basic slag, 500 to 600 lbs. per acre, and bone meal 500 to 600 lbs. per acre, applied on the matured row in the latter part of the summer about the last of August. To restore a patch for a second and third year, all weeds should be removed as fast as they appear so that the patch is clean when the picking season is over. We plow a furrow off one side of the row leaving it the proper width. Coming back the other side is barely edged to straighten it, the row being left about 10 inches wide. The ridge is then cultivated down. The refuse may be taken off the patch, or it will disappear with cultivation. The following year a furrow is plowed off the row on the same side as before. By this method the patch is being moved on new soil and your plants are still only two years old and should be more free from weed seeds than when you started.

I want to call your attention to three facts: Never mow a strawberry patch; never burn a strawberry patch over; never harrow a strawberry patch; if you would have the largest returns. The plants will not regain normal vigor after these operations. The leaves are the lungs and food factory of the plants. They cannot thrive without them. The man who assists nature most gets most returns.

Surface drainage should be well looked after. For mulch, I have always used heated compost. We use the spreader for covering the patch.

YIELDS: My yield this past season was 1,226 crates from 2 9/10 acres or about 11,414 quarts per acre. My average yield, however, one year with another, is about 8,000 quarts.

Q.—I understand you to say that you do not take up your plants until they start to grow?

A.—I believe that strawberry plants should be transplanted in the dormant stage. Every other tree is taken up in the dormant stage. But very often if you plant them in the dormant stage in a soil like mine they get a sudden check and then they will stand still; therefore I always wait until they make a start.

Q.—Did you ever try planting in the fall?

A.—No.

Q.—What varieties do you grow?

A.—I formerly grew the Williams, but I now have the greatest acreage of Glen Mary.

Q.—Is that for local sale?

A.—The greatest proportion of our berries go to the canning factory.

Q.—With regard to renewing old plantations, your system sounds all right in theory? Can you keep an old patch going continuously?

A.—I have not tried it long enough to tell myself. That depends on the location, the surface drainage in particular, and the richness of the soil, and provided no weevil got into the roots. If no insect pests got in, I fancy they would keep good for three or four years. I picked a second year patch this year and got more than I did last year, and they look as if they will do better for the third year.

Q.—I happen to be a neighbor of Mr. Wismer, and we feel proud of his success in growing small fruit. Could you not give a shorter rotation that would bring about the same result?

A.—I want to tell you that the backbone of the whole thing is intensive manuring and intensive preparation.

Q.—How soon after plowing down a strawberry bed would you plant it again?

A.—I told you in the start that I was continually changing my plans. I am just now turning over a new leaf in strawberry culture. Four years ago I was crowded out with chick-weed. I kept men in it continually from the time spring opened until the strawberries were ripe, and we picked 1,024 boxes from an acre. Then I plowed it all up, and I sowed it to wheat. I did not get a very good catch of clover, and I plowed it down and sowed it to wheat again, and got a remarkable catch of clover. I plowed that down last spring and sowed it to buckwheat, and this year I planted it to strawberries, and we did not have any trouble with weeds this summer, not even chick-weed. I sent a man to clean the patch and he went over it in less than three hours. I think by following that method I can run strawberries on the same patch for three or four years.

Q.—Did you ever grow strawberries in hills?

A.—No.

A MEMBER: I have tried them in hills at Clarkson and it is not a success. I also grew them in other parts, but did not get the yield that I get at Clarkson.

Mr. Hamilton: Our system is practically the same as yours. The cost of growing has increased. We are now paying two cents per box for picking where we formerly only paid one cent. We never had such a profitable season in strawberry growing as we have had in the last two years. The price right at the farm was 20c. a box, and for some of our raspberries we got 30c.

Mr. Rittenhouse: I am not satisfied as to the width of the matted row.

A.—I have three acres side by side, one acre and a half planted three feet six inches and the other four feet, and I like the four feet best. I want eighteen inches or better between.

Mr. Kydd: What do you do to prevent the runners filling up that row?

A.—I am thinking strongly of getting an instrument made for the purpose. I can have one made that I can use two horses on it. I always remove the mulch in the spring, some leave it on the row.

Mr. Rittenhouse: How do you get over the difficulty with the pickers wanting to pick both sides of the row?

A.—The last three years I have had my pickers take half of each row. I know that there are things that might be said for or against each method. I usually get rid of one or two when they start finding fault too much, and that settles it for the season.

Mr. Hamilton: With us the pickers pick on each side.

Mr. Rittenhouse: The most satisfactory way that I have found is to get the pickers to pair off and take a row between them.

A.—That was the very thing I was trying to avoid.

Mr. Rittenhouse: I never had better success than when I had a Polish gang, and I paid one man $3 per day to look after them.

A.—You get on with the Poles better than most people do.

SMALL HOLDINGS FOR PROFIT.

F. C. Keeler, Brockville.

I shall endeavor to speak to you concerning my experience along the lines of fruit and vegetable growing on a ten acre farm situated three miles east of Brockville on the bank of the River St. Lawrence.

I purchased this small farm in 1905, for the price of $1,300. which was at that time a cow pasture with a poor fence around it. First of all I erected a house and barn, and when I paid for the same I had the large amount of 40c. left.

I commenced work tilling my land and hauling manure, and started a fine vegetable garden. I had good luck, and cleaned up a nice little profit at the end of the season. In 1906 I puchased some very fine McIntosh apple trees, raspberry and strawberry plants, currants and gooseberries, and asparagus roots, and rhubarb, etc.

I planted these and cared for them along with my vegetables, thirty varieties in all. The best encouragement I received from my neighbor was that I would starve to death on ten acres. Well, I will admit I did my best to beat the game. We did not favor an eight hour day then. It was rather like a fifteen hour day, trying at the same time to show my people what could be accomplished on a small holding with a small investment. I have not starved to death on the small farm. Rather than that I have been able to come in posession of enough money to purchase a timber limit in the County of Addington, valued at $10,000, and also two other fruit farms, fifteen acres each, and I also am the owner of a $10,00 Victory Bond. I had the pleasure of being offered $10,000 for the first fruit farm which I paid the large sum of $1,300 for fourteen years ago, which encouraged me very much. I retail my fruit and vegetables direct to the consumer, receiving highest prices for same. It has been said we have the highest priced market in Ontario.

I purchased a motor boat large enough to carry one ton, and began to supply the wealthy river people on the islands on the St. Lawrence River. I also supplied the Cornwall Navigation Co. steamers.

Some of my crops do not pay me as well as others. Catering to a public trade I am asked for many articles that otherwise I would not grow.

I grow thirty varieties of fruit and vegetables, commencing on May 20th to cut my asparagus, one acre in all, which is worth about $500. Next strawberries, commencing June 20th, on three-quarters of an acre. I picked in 1918, 8,000 baskets, receiving $1,200 for same.

At the same time, we were picking radishes, lettuce, rhubarb, peas, early potatoes, beans, for which we receive a fancy price.

I next harvest my raspberries, currants and gooseberries, for which I could not give you exact figures on returns, neither in cash or acres, as I grow same in my orchard rows.

Commencing first in August on tomatoes, celery, melons, sweet corn, onions, cabbage and cauliflower. I load two wagons each day for market. I carry this along until about the end of October. I commence picking my McIntosh Red apples about the 15th October, and continue picking till we have finished all, including Russet and Greening. I had a fine crop of McIntosh, for which I received $10 per barrel, shipped to Chicago.

I also specialize in Irish Cobbler pototoes for seed, for which I received $3 per bushel. Also Golden Bantam sweet corn, Wardwell's kidney wax beans, and Gradus peas. I grow my seed and can rely on same.

I also have 100,000 strawberry plants for sale, namely: William Belt. Commencing to cultivate same in 1912, I then picked only 4,000 quarts per acre; but with careful plant selection and first-class cultivation I have increased the yield to 8,000 boxes per acre. The first three years I sold plants for $5 per thousand; to-day I get $10 per thousand. I have my plants growing as far west as Manitoulin Islands, and as far east as St. John, New Brunswick.

I am cultivating the Herbert raspberry, for which I cannot supply the demand, either in plants or fruit, and will say, now is the time for returned soldiers to get busy. I can safely say I do not know of a better investment for a man with a small capital to start right now on a small farm and plant fruit, and more fruit. It will double the value of the land, and you won't be tied to the cow's tail the year round, trying to get back the price of her feed in milk, on a large farm with a large investment and the long hours, which is the reason the boys won't stay on the farm.

I have had good luck with my help. I employ three men and ten berry pickers. I pay regular wages, and also give a prize for the best picked berrries, which I will say is a good investment. I have a bungalow for the pickers to live in, on the bank of the river. I furnish them with a boat, fruit and vegetables, and have had more and better results in this way. I think prices will be high for a long time, which is better for everybody, it puts more money in circulation.

Mr. A. C. Miller, Member of the Federal Reserve Board, says that high prices will prevail until the expansion of currency and credit, resulting from the buying of war securities on credit, has been eliminated, and until the volume of credit and currency has been reduced to an equality with the needs of industry and trade.

Barnyard manure is what I use, and potash and nitrate of soda when I can get it. Prune well; cultivate well; spray well; pack your fruit well. It will pay you to cast out all inferior culls, and it will increase trade.

Q.—What variety of raspberries do you grow?

A.—The Herbert. I think there is no raspberry like the Herbert for my business.

Q.—Do you pay your pickers by the day or by the box?

A.—By the box, and I built a nice bungalow at the river bank for the pickers to live in. They do their own work and cooking, and we do not have any bother.

Q.—What do you pay for picking a box of strawberries?

A.—If we have a heavy pick it comes down to a cent and a half, and it goes up according to the pick. I am paying this year, 2c. per box.

Q.—How much do you pay for picking raspberries?

A.—From 2 to 3c. and on up to 5c. A lot of my customers came in this year and said they would pick their own raspberries if I would allow them 3c. per box for picking them, and I was glad to do it.

Q.—Do you find that pays?

A.—If I had 100 acres of raspberries I would have it all done in that way. I think that is the thing we will have to do if we go into the raspberry business. I have had the pleasure of receiving $10 per barrel for my McIntosh apples this year, just as they come from the trees. I think I am safe in saying it is the only apple grown in our county that will pay a profit. I grow a large quantity of the Irish Cobbler potato, and sell them for seed. I always have a good supply of strawberry plants for sale. I am growing celery to-day that costs me less than one cent per head. I took the first prize for it at our exhibition. There is a man growing celery in a muck pond down our way, and he grows a large head of celery, but it is very bitter. I am told that last year his expenses were more than his income. He saw my plan and admitted that I had him beat. It takes a large quantity of fertilizer to grow it my way, but I can grow as much on one acre as I usually did on ten.

Q.—How large are your beds?

A.—Twelve feet square, I would not recommend that size to a beginner, I would prefer six by twelve.

Q.—What distance between?

A.—Just walking distance.

Q.—How do you plant?

A.—The celery is grown so close together that the centre heads bleach themselves, and next year I am going to grow corn very thick around the beds. There is difficulty in handling celery grown in that way. We have difficulty in carrying it to market without breaking it.

Q.—Do you use water?

A.—Yes, I use more water on the celery than I do on anything else. We have only a small area of celery planted as yet, and we have lots of help, and we put the water on with pails.

Q.—Why does not the asparagus pay you as well?

A.—It cost too much to keep the beds clean.

Mr. Robertson: I have an asparagus bed that I have been running for twenty years, and I got four tons off it last year.

Mr. Keeler: The reason I grow asparagus is that it is the only thing that I can have to come in just before the berries. I have tried two varieties of black raspberries and they won't grow in our climate.

Mr. Fleming: Will the canning factories take the Herbert raspberries from you?

A.—The canning factory does not get any of our fruit. We have not begun to think of the canning factory business. We sell our stuff to the campers on the Thousand Islands.

Q.—What do you get for the celery?

A.—Three bunches for 25c., I believe in high prices. It is better for the laboring man and everybody else. The working man is getting more luxuries now than he ever had before. It is better for us to be able to pay the laboring man $4 per day than $1 per day. I can remember when I got laboring men for 50c. per day, and I had the pleasure of selling strawberries for eight boxes for a quarter.

Q.—Did I understand you to say that you took four or five barrels of apples off a McIntosh apple tree ten years after planting?

A.—Yes. I bought them when they were three years of age, and I planted them in this garden soil, and they grew very rapidly. I planted them thirty feet apart and forty-eight trees to the acre. I live where I can get stable manure for fifty cents per load, and I can get all I want.

GOOD NEW NOT WELL-KNOWN VARIETIES OF SMALL FRUITS.

M. B. Davis, C.E.F., Ottawa.

I purpose to lay before you a brief description of a few varieties of small fruits that are worthy of your consideration.

All the varieties here recommended have been tested for some years on the trial grounds at the Central Experimental Farm, Ottawa, and it is thought that having shown a good record of performance, as compared with some of our standard varieties, it is time the attention of the trade was called to their merits, so that individual growers might test them on a larger scale, under their own conditions.

For the information of those not acquainted with our soil conditions, I may say that the soil at the Horticultural Division in Ottawa is a very light sandy loam.

Strawberries.

Portia. I wish to call your attention to a variety named Portia, which is a variety of C.E.F. origin. This berry is a seedling of William Belt, and is promising from many standpoints. In habit, it is very vigorous with abundant large and dark green foliage. Practically resistant to rust, it is an excellent plant maker, and is a variety that can be planted the maximum distance apart with the assurance that it will readily form a good matted row. For anyone growing berries on the hill system it is to be especially recommended, as it forms an excellent crown. The flower is practically imperfect, producing a berry medium in size and slightly larger than Parson's Beauty. In color, it is a rich deep crimson, which is carried right through to the core, with seeds which are very prominent. With its regular conic shape, attractive color and prominent seeds it is difficult to imagine a more handsome product, as it is exceptionally firm and solid it should be an excellent shipper, especially if picked before it becomes over ripe. In quality it is good, possessing a mildly acid to sweet flavor. As a canning berry it stands in a class by itself, being the only berry among the best known standard sorts to hold its color and surpassing all in quality and appearance.

In season it is about the same as Parson's Beauty, but gives a larger yield at the end of the season, and a few more pickings. Planted with Parson's it would be a distinct acquisition to any patch, and where growers are supplying a special trade this is a variety of such distinctiveness, that it could be used as a good drawing card when sold as the canning berry which holds its deep rich color.

A few plants of this variety will be available at the C.E.F. next spring.

Raspberries.

In raspberries, I wish to call your attention to three varieties, Newman No. 23, Count, and Brighton.

Newman No. 23 is a seedling of unknown parentage, but according to Mr. C. P. Newman of Lachine Locks, Que., who originated this variety, it is most likely a seedling of Eaton with King as a male parent. This variety is outstanding at Ottawa and has impressed us most favorably. It is pre-eminently a shipping berry. As it has done excellently on Mr. Newman's soil, which is much heavier than ours, it apparently has wide range of adaptability. The bush is a vigorous stocky grower of about four to four and a half feet high, with rather an open centre, but strong canes with numerous branches.

The fruit is large, slightly larger than Herbert, bright crimson in color and very firm. In quality it is practically as good as Herbert. In productiveness it ranks close to Herbert with us, and apparently is as good on a heavier soil.

As a canning berry it is difficult to surpass, holding its shape excellently.

Two shipping tests were made of this and a number of commercial varieties, including Herbert and Cuthbert. Upon the return of the crates, Newman 23 easily won first place. The fruit had not settled or mussed, and when the boxes were emptied the berries in the bottom were still firm and shapely, whereas, in the case of Herbert the fruit had fallen a half inch and the bottom layer was nothing but juice, while Cuthbert, recognized as a good shipper, showed considerable mussiness in the bottom.

For a grower who intends to sell to the cannery or who ships long distances, this variety is a distinct acquisition.

In season, it commences to ripen with Herbert, but has a much more extended season.

Plants of this variety will, I understand, be available next fall from Mr. C. P. Newman, La Salle, Que.

Count. A very early raspberry originated by the late Dr. William Saunders, is worthy of a place in your plantation where an early berry, which has good appearance, is a good yielder, a good shipper, and a good canner is desired.

The bush is a very vigorous upright grower, about four feet in height and hardy. Berry, bright red in color, about the size of Herbert, medium quality and firm. Very early and productive. A seedling of Bigger's Seedling.

Brighton, which is almost as early in season, slightly better in quality, not quite as heavy a yielder, not as good a shipper, is also worthy of extended trial.

These two varieties are outstanding early sorts, and mark distinct progress in the development of a very early berry, which is good in quality, firm and productive. Plants of these varieties will be available in limited quantity next fall from the C.E.F.

GRAPES.

Three varieties of grapes are on our test as worthy of introduction to the trade.

Lincoln. The first is a blue grape called Read's Hybrid, originated by M. H. Read, of Port Dalhousie, and named Lincoln after Lincoln County. This grape is said to be a seedling of Concord with Black Hamburgh, and has been at the Central Experimental Farm trial grounds since 1897. Its record of performance, compared with Concord, is quite noteworthy. In productiveness it has given about 20 per cent. better yields than Concord. The vine is a vigorous grower, free of mildew and quite hardy, a factor, of course, not so vital in the fruit districts. The berry is somewhat smaller than Concord, being about the size of Brighton, the bunch is about as long as Concord, more oblong in shape and much more compact, making a very regular and handsome bunch for market purpose. In quality it is somewhat better than Concord, having inherited some trace of quality from its Vinifera parent. As a shipper we have no evidence except apparent characteristics, which lead us to believe that it should be a better shipper than Concord. It has a thicker and tougher skin, according to the mouth and teeth test, and this is borne out by accurate measurements and examinations under a high-power microscope. According to a large number of sections of the skins of these two varieties, which were made and examined: Concord has an average thickness of 39.74 micromes, while Lincoln has an average skin of 57.54 micromes in thickness. In other words, Lincoln has a skin which is 45 per cent. thicker than the skin of Concord.

In addition, the same examination showed that the cells of the Lincoln skin were smaller, thicker and more closely packed, this giving accurate evidence to corroborate our preliminary test as to thickness and toughness of skin.

These findings lead us to conclude that this should be an excellent shipper. In season, it is about with Moore's Early.

This variety is certainly worthy of a very extended trial and it is to be hoped that Mr. Read can be persuaded to introduce it to the trade immediately.

Mary. This is a variety of red grape which is worthy of mention. A seedling of Catawba, introduced by a Mr. Hasselkus, of Griffin, Georgia, in 1885. It resembles Lindley very closely, but is more vigorous and more productive. It is somewhat earlier than Lindley and fully as good in quality, makes a more compact bunch and should be as good or even a better shipper, and as good a keeper. A few vines of this variety will be available next fall at the Central Experimental Farm.

Seedling Grape from Wilkins. This grape was first brought to your attention in 1898, when it was mentioned by the Committee on seedlings and new fruits, when it was said to be worthy of trial. This is a seedling grape from O. F. Wilkins, Bridgeburg, Ont.

It is a white grape of medium size, of better flavor than Niagara or Concord. The bunch is of good size and form, and quite compact. Season somewhat earlier than Niagara, skin about the same thickness. This variety could well be used for the home market to extend the season of Niagara. In productiveness it has proved fully equal to Niagara, at Ottawa.

CURRANTS.

The attention of growers has already been called to the Saunders Hybrid black currants, which have given such excellent results at Ottawa and elsewhere, when given a trial.

The best of these varieties are exceedingly productive, hardy, of good quality, and ripen their crop fairly evenly.

Saunders, which is already on the market, is one of the best, while Kerry, which is a newer variety, is probably the pick of the whole lot. Cuttings of Kerry have been supplied to nurserymen and will probably be on the market next fall.

Q.—Have you any raspberries later than Cuthbert?

A.—Yes, we have one of Dr. Saunders'. It is not much more than a week later than Cuthbert. It will give you a larger crop at the end of the season than Cuthbert. The Thara gives a large quantity of fruit. We have never been able to grow blackberries sufficiently hardy to withstand our climate at Ottawa. The St. Regis is the earliest berry we have, and it is not a heavy yielder.

ELECTION OF DIRECTORS.

MR. FLEMING: I am not a director of this association, but the point has been brought up that the directors are selected by districts, and they might be selected according to the membership in the district. For instance, Norfolk district has over two hundred members and the district of Forest has only six members, and the representation on the Board is the same in both districts. I am told that the directors do not receive any remuneration, and that they give their services free, I do not think that is right.

A MEMBER: Norfolk has about one-third of the total membership, and that would mean that they would have one-third of the directors.

MR. DEMPSEY: The constitution will not admit of any change without notice is first given of the proposed amendment.

MR. ROBERTSON: Was not there some change in the districts a year ago?

MR. HODGETTS: Yes. The Eastern Counties at that time were giving us very few members and two of the districts were amalgamated, and Wentworth and Lincoln were separated. Mr. Fleming thinks that we ought to go further, and that the districts that are not interested in fruit growing should not be represented as fully as they are at the present time. I understand that the vegetable growers have some such scheme.

THE CHAIRMAN: When this change in the constitution was brought about it was with the view of trying to encourage fruit growing in different parts of the province, and to interest a wider section of the people. I can remember very well when the Ontario Fruit Growers' Association was practically a Grimsby Fruit Growers' Association. After a while the area in which productive fruit growing was carried on was increased, and it was thought desirable by the officers of the association to try to encourage that.

FERTILIZERS FOR THE FRUIT GROWER.

Henry G. Bell, Director of the Soil and Crop Improvement Bureau of the Canadian Fertilizer Association.

The future of Canada's fruit market depends on how fully Canadian horticulturists adopt methods that most quickly and permanently increase yields, and improve quality. Increase in demand does not always follow increase in production, but in this case I am confident it would, in that better quality of product would of itself constitute an important advertising medium. Moreover, better business methods which contemplate a more careful standardization of the product being placed upon the market, induce more sales-getting advances into old markets and invigorate advances into new territory.

The apple industry of Canada in 1910 amounted to approximately 10½ million bushels of fruit. Of this, Ontario produced considerably over half. Mr. Macoun, Dominion Horticulturist, is sponsor for the statement that apples can be successfully grown in the provinces of Ontario and Quebec over an area of about 700 miles in length, varying in width from 30 to 50 miles.

Opportunity for the successful production of fruit in the province is dependent upon at least six great factors:

1. The soil.
2. Climate.
3. Variety of choice.
4. Tillage practices.
5. Disease and insect control.
6. Plantfood supply and management.

No doubt other factors could be added, and some already mentioned could be sub-divided, but these are the main points which interest the average grower of fruit of all sorts. I shall attempt to discuss but one of these factors, since practical horticulturists are informed pretty fully on most of the others. The point to which I shall address my attention is the last—orchard plantfood and its management. This topic of itself is one of enormous importance and great breadth. In fact, it might involve the specific study of soil types, methods of tillage, sources of plantfood, etc. However, of these sub-divisions I shall again make a choice, not in any way insinuating that I consider the other factors of lesser importance, but to conserve the time at our disposal.

Plantfood for the orchard then, may come from the soil, green manures, leaves, stock manure, and from fertilizers. Mr. Macoun has on former occasions pointed out the necessity of plantfood in the orchard. He has shown that 160 barrels of average apples take from the soil approximately 8.9 lbs. of nitrogen. 5.2 lbs. phosphoric acid, and 32.8 lbs. potash. This being the case if the orchardist continues to take off crop after crop without putting back any plantfood, it is but a mathematical problem to figure how long the bank account of soil fertility will stand the draft.

This may sound to be a theoretic treatment of the subject. Let me point to an exact case in point. Before the oldest member of this audience was born, thousands of acres in southern Ohio, along the Ohio Valley, were producing profitable crops of apples. In fact, it was in this territory that orcharding in the central part of North America had its beginning. Twenty-five years ago the same territory exhibited equal, if not greater areas of orchard, most of which were old trees, but these were orchards that were not returning a reasonable interest on the money invested in the industry. In fact, the annual history ran about as follows: Springtime blossoming gave great promise and provided the shrewd orchardist with ample opportunity to unload his unprofitable enterprise on the back of some unsuspecting tenderfoot, who admired the location, the general beauty of the landscape and the promise of the orchards. Shortly after the blossoms dropped, the early setting of fruit began to show unsatisfactory development. This discouraging state of affairs increased as time went on, until that section of the Middle West became famous for its non-productive orcharding. The Ohio Experiment Station was appealed to. The orchard specialists of that institution claimed that the trouble was the uncared for condition of the orchards. To demonstrate their claim they engaged areas of orchards where proper pruning, spraying and tillage were immediately put into practice, but the results were still far from satisfactory. This led the Soils Division of the Experiment Station to investigate the plantfood content of the orchard soils, with the result that the trouble was traced to a lack of plantfood. Ohio orchardists have learned how to supply proper plantfood, with the results that the orcharding of this section has come back to be one of the foremost industries. Of the methods we shall speak later. The point I wish to make is that orchard practice which indefinitely neglects supplying plantfood is as sure of disaster as we are sure that the sun will rise to-morrow.

I have been asked to speak on the subject of fertilizers for the fruit grower's use. "Why use fertilizers?" The answer is obvious. Orchard soils are running short of necessary plantfood, livestock manure is becoming scarcer and scarcer; in fact, in view of our ordinary mixed farming practices, there is not one-hundredth enough to go round. With the growing of legumes as cover crops, one important constituent of plant food—nitrogen—is being returned. To answer the question specifically, "Why use fertilizers?" let me point out what fertilizers have done in actual tests. First, in our own province, the ten year report of the Vineland Station shows increases in three yields from 6 per cent. to 75 per cent., as a result of proper fertilization of a peach orchard which was set apart for tests. Pennsylvania Station has been conducting extensive orchard investigation in various parts of that important orcharding State. In Bulletin 153, published by Prof. Stewart, he records the fact that by the addition of fertilizers, yields have been increased 265 and 308 bushels per acre over normal, without fertilizers. He reports that the gains have been made at fertilizer costs of about 13c. to 27c. per bushel, even at present rates and prices. In fact, on one plot, No. 2, the increase was made at a cost of 9c. per bushel.

The investigations regarding orchard fertilization conducted by the Ohio Experiment Station, which are probably among the most thorough-going to be found on the continent, record that the increases attained in apple production alone, from 1910 to 1915 were worth over a quarter of a million dollars. Where 12½ lbs. of fertilizers were applied, per tree, on an orchard of Ben Davis apples, the yield was increased from 20 barrels to 49 barrels per acre. The following year the same orchard yielded, unfertilized, 9 barrels; fertilized, 46 barrels per acre.

Maine Experiment Station has conducted orchard fertilization tests at Highmoor Farm since 1914 with the following results:

Orchard Fertilizer Experiment. About 130 Ben Davis apple trees in each plot. Average yield of apples in pounds per tree.

Year	Plot 6 A No fertilizer since 1912	Plot 6 B 7.2 lbs. 5–8–7 fertilizer per tree	Plot 6 C 14.4 lbs. 5–8–7 fertilizer per tree
1914	172.8	158.8	194.2
1915	121.1	131.8	157.4
1916	113.7	138.7	147.2
Average for 3 years	135.7	143.1	166.6

New Hampshire Experiment Station, which has been conducting a fertility test for some time past, has not recorded any great gains in yield. It has found, however, that the size of fruit has been increased by the use of fertilizers and the proportion of No. 1 apples, also the total area and weight of leaves has been greatly increased.

I could go on, but these instances should prove sufficient to answer the question, "Why Use Fertilizers?"

The comparative newness of this part of the continent has, up till recently, made it almost unnecessary for you to bother about the plantfood of the soil. From the time of the red man until periods quite within your own memory, all that was necessary was to stir the soil, plant the crop or set the tree and reap the crop. It is true that within the last couple of decades a great deal of attention has been given to such points as the best rotation of crops, best cover crops, how deep and how frequently to till the soil, etc., pertaining to the mechanical management of the soil. These are of enormous importance and are absolutely essential to the proper use of fertilizers because fertilizers are carriers of plantfood. Your crops—whether apple trees, grape vines, celery, cabbage, or what not—cannot take up a bit of plantfood, other than carbon dioxide, unless the plantfood is first dissolved in the water of the soil or in the root juices of the plant. Hence, the absolute necessity of an abundant supply of water. Your own practices of plantfood management have been comprised very largely of the growing of legumes and the use of stock manure. Both of these practices are good, but together they fall short of the possible best, first, because the supply of manure is becoming scarcer and scarcer, and its quality poorer; and second, because there is a demand for a great deal more plantfood than can be supplied in the nitrogen from legumes or from any other source than fertilizers.

Now, from my investigations, where I have had opportunity to examine orchard practice in various parts of the province, I am convinced that one of the things that is holding back your net returns from orcharding in Ontario is a lack of specific information regarding fertilizers. I am therefore going to ask your careful attention for the next few minutes while I discuss what fertilizers are and how they should be used.

The use of fertilizers antedates extensive fruit growing in Ontario. Fertilizers came as a product of the years following the French Revolution. Starvation aroused men to seek new methods of crop production. Leibig, the German chemist, developed methods to treat bones in order to render them soluble. These methods involved the addition of sulphuric acid to bone, and later to phosphate rock, which is a carrier of the same plantfood constituent. The acid reacted on the rock, breaking it down into a new substance, which substance—acid phosphate—is to varying degrees soluble in water. This important constituent of plantfood causes the ripening of the crop. This was a great discovery, because in the systems of European agriculture an addition of bonemeal, treated as described, and later of phosphate rock, also treated, which forms acid phosphate, was found to greatly hasten the ripening of grain and other fruit crops and to invigorate their root growth. But students of plant growth soon came to see that by adding bone or acid phosphate only one of the important constituents which were falling short in the soil were being supplied. Hence, the use of materials carrying nitrogen and potash.

Now let us get a perfectly clear view of the leading functions of these important plantfood constituents because it is they that we meet at every turn in fertilizers. Phosphoric acid or phosphorus hastens the ripening of tree fruits and grains. Nitrogen is the constituent that increases wood and leaf growth and retards the ripening of the fruit. It may be that by manuring and growth of leguminous cover crops you have so enriched your soil in this constituent that your trees have too great a twig growth and too much leafage, thereby cutting down the fruit yield and impairing its quality. You must balance up the ration with phosphoric acid and potash. Potash seems to have an important bearing on the health of the crop, in that it increases disease resistance.

Now comes the question, where do the carriers of these three important plantfood constituents in fertilizers come from?

Phosphoric Acid. We have already pointed out that the phosphoric acid came from bonemeal, which also contains a small amount of nitrogen, and from acid phosphate. Another, and slower carrier of phosphoric acid, sometimes used in the orchard, is basic slag. This material is a by-product of the steel industry, containing a low and relatively slowly available form of phosphoric acid and about 30 to 45 per cent. of lime.

Nitrogen. The nitrogen or ammonia of the fertilizer may come from several sources. First in order of availability is nitrate of soda, which is a very soluble salt, obtained from Chile, South America. This nitrogen carrier gives quick action. Nitrate of soda used on a sandy soil may be so quickly soluble that part of it may leach away. Sulphate of ammonia, the by-product of the coking industry, is another important carrier of nitrogen. It is more slowly soluble than is nitrate of soda. A new product which is finding its way more and more into the fertilizer market is cyanamid, a material composed of the calcium of lime, carbon of the air and nitrogen of the air. These are combined electrically, producing a dark grayish dust or powder, which carries a considerable amount of fairly rapidly available ammonia. To these three sources of nitrogen may be added blood and tankage, which are the by-products of packing plants; tankage carries some phosphoric acid also, in as much as it contains bone.

There is a point worth emphasizing at this stage, and that is the importance of relative availability. For a rapidly available fertilizer,—if your orchard should be in need of that—nitrogen, coming largely from nitrate of soda or sulphate of ammonia, should be used. For an orchard fertilizer to last through the growing season a large per cent. of the nitrogen should come from organic sources such as blood and tankage.

Many eastern orchardists make extensive use of the same analysis of fertilizers as they use on their potato crop. These fertilizers usually contain about one-third rapidly available nitrogen and the remaining two-thirds in a form that will last throughout the growing season.

Potash. The carriers of potash, which previous to the war were most largely used were sulphate and chloride or muriate of potash. In the cruder or less pure form these potash salts were called Kainite, which contains about 12 to 14 per cent. potash, as compared to 48 or 50 per cent. in sulphate and muriate. During the scarcity of this important plantfood the fertilizer industry on this continent developed several American sources, which include wood ashes, potash from cement plants, the liquor from sugar beet factories, and the evaporated waters of salty lakes of California, Nebraska and other sections. The potash supplied in this latter form frequently contained considerable carbonate of potash as well as sulphate and chloride. This carbonate form is equally good as plantfood.

Now the fertilizer industry obtains its raw materials from all of these sources. It assembles the materials six months ahead of the time that you are ready to use them. Now I want to tell you something about the care with which fertilizers are made, not to advertise the industry, but to disabuse the minds of some, perhaps, who may still have a feeling that the fertilizer industry is simply that line of business that collects all that is useless to every line of industry and palms it off on the farmer as something mysterious which is good for his farm. On the contrary, the fertilizer industry possibly stands on a better basis than most other industries when viewed from the standpoint of the scientific care with which its products are manufactured. Chemistry is of course the basis of the industry. Every raw material which is assembled is carefully analyzed. In making up what is known as a brand or guaranteed analysis the various ingredients are combined or mixed precisely on the basis of their chemical analysis. Not only is this the case, but frequently samples of the product in process of completion are tested for analysis. When the mixing is completed the product stands for 30 to 90 days when it is again sampled, reground and resifted, before being put on the market.

In the foregoing brief statement I have tried to cover some of the most important points in the making of fertilizers. When you come upon the product on the market or when the salesman or agent calls at your farm, he talks about brands, and he mentions such figures as "3-8-3" or a "4-10" or some other analysis. Now the first figure always refers to nitrogen or ammonia, the plant grower. The second figure always refers to phosphoric acid, the plant ripener. While the third figure refers to potash. The various figures represent percentages of a ton, that is, a 3-8-3 means that there is 3 per cent of a ton or 60 lbs. of nitrogen contained in this fertilizer, the 8 means that there is 8 per cent. of a ton or 160 lbs. of phosphoric acid in the fertilizer, and the 3 per cent. of potash means that there are 60 lbs. of potash in this particular brand. One more point: Remember that each of the brands are registered with the Dominion Analyst, and that the fertilizer manufacturer is liable to a severe penalty if the product offered on the market under tag is found to fall below the guaranteed analysis recorded on the tag. I mention these points to disabuse your minds of any idea of mystery or subterfuge which formerly you may have attached to the fertilizer industry.

I have failed as yet to touch upon the point which comes nearest to your business. You want some light on the question what analysis and how much fertilizer should a man use on his orchard in order to get best paying results? Without elaborating on this subject I wish to make three statements which I could substantiate with abundant proof if time permitted. First, you cannot get at the best analysis of fertilizer to use on your soils by soil analysis. Second, no one, from a sample of soil, can advise you exactly how much or what analysis of fertilizer to use on your soils in order to get best results under your conditions. Third, actual experience on your own farm, under your own conditions, is by far the best indicator as to most profitable future practice. I can tell you what was used in various experiments and actual farm tests. On the basis of what information I have accumulated concerning soil types and crop requirements, along with observation of extensive practice I can tell you what I think will give best results under your conditions, but having done this the exact working out of your problem is left with yourself and so it must always be. For instance, in the Ohio experiments, where they got such remarkable results by fertilizing the orchards, they increased the yield from 20 barrels per acre to 49, and from 9 to 46, by using to the tree 12½ lbs. of plantfood composed of 5 lbs. of nitrate of soda, 5 lbs. of acid phosphate and 2½ lbs. muriate of potash. This they scattered in a circle around the tree, out about the extent that the branches of the tree covered the ground. In various of the experiments I have studied, the investigators found that the best time to apply fertilizers to the orchard was just when the fruit buds are forming or just at the time they were opening. In some of the Ohio experiments they did not find a pronounced profit from the use of potash. A few rather interesting records are on file regarding actual financial returns where different fertilizers supplying nitrogen and phosphoric acid were used. They are as follows:

Comparative results in Ohio Tests.

	Amount used per tree		Total gain	Gain per tree
	Nitrate of Soda	Acid Phosphate		
1.	2½ lbs.	5 lbs.	$103.	$2.45
2.	5 "	5 "	171.	4.07
3.	10 "	10 "	174.	4.14
4.	10 " tankage	10 " bonemeal	6.65	1.58

In some sections of Europe it is considered good practice to supply a large amount of phosphoric acid in the form of basic slag. Pennsylvania Station has tested this source of phosphoric acid in comparison with acid phosphate for the orchard and finds that acid phosphate leads basic slag by 54 bushels to the acre as an average of their tests.

Finally, it seems to me that the most profitable fertilizing practice for your orchard can be determined to quite an extent by a study of the trees themselves. If the leafage is sparse and the twig growth is indifferent, there is clear indication of the lack of nitrogen. If, on the other hand, twig growth is extensive and a great deal of leafage and a slow ripening of the crop, there is pretty clear indication of the lack of phosphoric acid. Undersized apples, insipid in taste, and fruit trees susceptible to disease indicate a marked lack of potash. As a general rule you will find sandy or gravelly soil short of all three of the plantfood constituents, and orchards on such soils will naturally require more abundant feeding than were they found on richer loam soils. Clay soils are fairly well supplied with all three plantfood constituents, but the phosphoric acid and potash of clays may be in forms in which the tree cannot readily use it. It may pay.

therefore, to make material additions of well-balanced fertilizers to orchards on soils of this type. In actual farm practice, as the result of the investigation, Pennsylvania Station recommends the use of 500 lbs. per acre of a fertilizer analyzing 6 per cent. ammonia, 8 per cent. phosphoric acid and 5 per cent. potash. Remember Pennsylvania Station makes the report that it finds that on orchards located on the best soils fertilizers can be used at greatest profit.

In these remarks I have tried to give you a survey of the fertilizer industry in its relation to your own. I have pointed out the actual carriers in fertilizers of the same plantfood exactly as you are supplying in stock manure. I am not recommending any brand, make, or analysis of fertilizer, because a scientific investigation of the problem forms no basis for such a recommendation, but there are points that I wish to lay special emphasis upon. The first point is that orchard fertilization is eminently profitable. I am aware that there are experiments on record which would not substantiate this statement. I am aware also that there is abundant orchard practice on record as well as a considerable fund of experimental data that abundantly supports my statement. I do not attempt to say that the same analysis and quantity of fertilizer used on your orchard would give the same results as those used on your fellow fruit grower's farm in some other section of the province. Some of you are dairymen to a small degree. You know the importance of feeding your cows abundantly a well-balanced ration. Feeding your fruit trees is precisely the same problem. The second point I wish to make is that not only does quantity depend up on proper fertilization of the orchard, but quality is also involved, and the third and last point is that fertilization is one of the big factors—but only one—involved in the improvement of the orcharding industry of Ontario or Canada. Fertilizers will not take the place of drainage, nor will they do the job of spraying or pruning or proper soil tillage, nor will fertilizers take poor varieties and produce good results from them. But scientific investigation and actual practice show that the liberal use of suitable fertilizers in connection with other proper management rarely fails to give abundant and profitable results.

FRUIT AND VEGETABLE COMBINATION ON SMALL ACREAGES.

E. J. Atkin, Leamington.

Few native Canadians have any conception of the possibilities of an acre of soil. The principle of expansion is as old as the law of self-defence. Individuals as well as nations have grasped for more for all time. In our greed for gain we ignore the small and seemingly insignificant things in nature, and rush wildly on without chart or compass. Unless our system of Agriculture is radically changed within the next fifty years, coming generations will have a food situation to solve, that is now perplexing India.

This fair Ontario of ours, which ranks highest of all Provinces in the Dominion, for the production of food-stuffs, is being dispoiled to satisfy this lust for expansion.

With our forests gone, and our marshes and low-lands drained, so that the water that should remain for months in land is rushed in a few weeks to the sea, we have nothing to expect but blights and diseases for our orchards and crops; and drought, hot winds and hard winters for our farms.

The past few years, owing to the great war and the extreme scarcity of farm labor, has taught our farmers more in regard to intensive Agriculture, smaller acreage, and larger yields than the whole previous century. The successful farmer of to-day will no longer spread a five-acre crop over a twenty-acre field, as the net income will not warrant the expense. The farmers of to-day, and more particularly the fruit and vegetable growers, have learned several valuable lessons within the past few years. The first and foremost of these perhaps is, that intensive farming and rich soil is the only line of Horticulture that pays. Secondly that crop rotation must be followed to produce successfully, year after year, a large, healthy and profitable crop.

As to the first point, it is not my intention to mention it but briefly. In the Leamington section, where the scarcity and high cost of manure makes it almost prohibitive, we must resort to other means. True, we do use a small amount of farm-yard manure, particularly where we have to follow extremely intensive forms of culture, as in the greenhouses and on our irrigation plots. In the latter we give an annual application of about twenty tons per acre, which is supplemented with commercial fertilizers. Where possible a cover crop is also sown in the fall which is plowed down in the spring. On the remainder of the land a fall cover crop is generally grown, this is plowed down in the spring and supplemented with commercial fertilizers.

Crop rotation is the one that requires, perhaps, the greater consideration, and the proper rotation, to a great extent, controls the loss from insect pests and plant diseases. While the majority of those before me, I presume, are fruit growers, a large number engage in vegetable growing as well. These two work well together in a good many localities and on proper soil, especially one that is sandy in nature; they give us a combination that is both profitable and easily handled. While vegetable growing is the principle one in our district, a large number of the growers have found that a combination of the two work well together, especially the smaller fruits, such as strawberries, currants and even peaches, to a very great extent. As a sandy soil is not so well adapted to cherries, plums and pears, these are very little grown and are not nearly as profitable as the aforementioned. The peach trees are planted out early in the spring on a soil that has been previously well prepared. Early tomatoes are then planted in the orchard; the cultivation necessary for them gives the trees a good start at no extra expense. In the fall, the vines are pulled up and piled around the roots. These give protection and also serve as a catch to the snow. The second year the orchard is planted with melons. These grow well and the only preparation necessary is digging some well rotted manure in the hills. The third year often no crop is planted if the trees have made a normal growth, but if the space is limited and the trees permit it, two rows of tomatoes are often planted the wide way, the third year. By the fourth year the trees will commence to bear and further intercropping would be unwise.

Under the irrigation a different rotation is followed. Cabbage are planted in the spring, usually about April 1st to 10th. These will all be harvested by the first week in July. The ground is then given a light top dressing of manure and about August 1st to 15th, is planted to strawberries. These produce a very good crop the next year. After cropping they are cultivated, cleaned out, and later on mulched and left for a full crop the coming year. When picking is over they are plowed down and the ground planted to late potatoes. The following year the ground is planted to onions, egg-plant or peppers. In this rotation five profitable crops are grown in the four years, while under ordinary means of culture only three would be produced.

If we had needed proof that a rotation of crops was necessary we had an ample one this last season. A half acre plot was planted to egg-plant, half of this area had been an old strawberry patch the previous year and had also grown a crop of late potatoes, or in other words, was the fourth year of the rotation mentioned above. The plants were large and healthy and produced over one-half bushel per plant, of first class fruit. The other quarter acre had been planted with egg-plant the previous year. This crop had been healthy and showed no signs of diseases, but the crop this year developed practically every disease common to egg-plant and I think some that were not. The crop was almost a total failure. These two plots were side by side and throughout the season it was easy to tell, even from a distance, just where the division came. We find that if a crop is not planted oftener than every four years, the diseases common to it and the family to which it belongs give very little trouble, a probable exception to this is the mosaic disease and I very much doubt if this is carried over in the soil, but rather with the seed.

To sum up, rich soil, good cultivation and proper rotation, will give large, healthy, profitable crops with the minimum expense and labor.

PROF. CAESAR: Was it a disease that caused the wilting of the egg-plant?

A.—Yes, and we also had a lot of leaf spot, and insect pests, and the white fly was also very bad this year. The plants were raised in the greenhouse and got infected there. The plants were all the same, so that it could not be due to anything else than want of proper rotation, and having two crops in succession.

Q.—What kind of setting do you get from the strawberries?

A.—A good setting.

Q.—How wide do you leave the rows?

A.—About eighteen inches. We have conditions in Essex that are perhaps different from other parts of the province. We have a long growing season. In fact, when I left home on November 11th we had had only one white frost, and everything is growing yet. We have an irrigation system, and dry weather does not have any effect. We always water the ground before planting.

MR. BUNTING: Do you have any difficulty in getting plants at that time of the year?

A.—No, we generally leave a row for the purpose of raising plants. Our second year is the best picking. Our land is badly infested with a kind of Crowfoot weed that comes on the last of June. We use a heavy cultivator and plow the rows down to six inches wide. Our soil is loose and we use a spring tooth cultivator and cultivate the width of the row and then harrow with an adjustable harrow crosswise; that generally tears them up pretty well, and a little hoeing will clean the patch, and after that they will come on fine.

REPORT OF RESOLUTIONS COMMITTEE.

Moved by MR. BUNTING, seconded by MR. FISHER: "That in view of the rapid depletion of the ranks of qualified men in the various departments of agriculture in Canada owing to more attractive financial conditions elsewhere and in other lines of Industry: This convention would respectfully urge upon the Federal and Provincial Governments the advisability of special consideration being given to this undesirable state of affairs, and that steps be taken to retain in Canada the services of men who have demonstrated their worth and ability in the public service."

Moved by MR. BUNTING and seconded by MR. CRAISE: "That the members of this convention of the Fruit Growers of Ontario believe that the time is now ripe for the bringing together of the fruits of the various provinces of this Dominion in a 'National Apple Show' and would request the incoming directors to take such steps as may be necessary, by communicating with sister societies and the officers of the Fruit Branch at Ottawa, with the view to arranging and preparing for an exhibition of fruit in the Fall of 1920, to be held in the City of Toronto, but which would be Dominion-wide in its scope and influence."

Moved by MR. BUNTING, seconded by MR. DEMPSEY: "That in connection with the above 'National Apple Show' we believe it would be a very opportune time to hold the Fifth Dominion Fruit Conference, when problems of a general character in connection with furthering the Fruit Industry of Canada, might be considered and discussed by representatives from all provinces of the Dominion, and that plans to this effect be taken up at once."

MR. CUTTING: I would suggest that a Dominion Fruit Conference be recommended regardless to whether an apple show is held or not. I think the important point in this resolution is the holding of a Dominion Fruit Conference.

MR. FISHER: What are the particular questions to be introduced at the conference? No doubt the Department will want to have a definite object.

THE CHAIRMAN: Different things will be coming up from time to time. We have several important questions at the present time; the basket question is a pressing one. Probably in another year it may be necessary to mark the weight on every package. A barrel of apples cannot be shipped to the United States unless it is marked "U.S. standard barrel."

MR. BUNTING: Another fact that is important is that the British Columbia and Nova Scotia Fruit are capturing the market, and it seems to me that Ontario Fruit Growers should get acquainted with their competitors and learn their methods.

MR. SHEPPARD: The fruit business in the Province of Ontario is going back, and we will have to do something. I think it would be a good thing for the Provinces to get together, and see if we cannot do something to help the fruit industry.

PROF. CROW: There will be no lack of topics for discussion. Mr. Sheppard's suggestion gives me the opportunity to emphasize the changes that have taken place in Ontario apple growing. Any one who has travelled over Ontario must realize that Ontario apple growing has fallen back very materially during the last few years. I do not think it is too much to say that Ontario apple growing has gone back twenty years in the last five years.

Moved by MR. BUNTING, seconded by MR. FISHER, "That, whereas, during the past few years the Government Employment Bureau has given special attention to the enlisting of women and girls for work on the fruit farms of the Province, and whereas, there is still a desire on the part of the fruit growers that this help be available in order that they may maintain and increase their production, and on the part of the women and girls that they have this opportunity for a healthful and remunerative vacation, therefore we would respectfully request that the Government continue to conduct this branch of their employment bureau." Carried.

MISS STRAITH: There may be some misunderstanding about my representing the girls in this movement. The Ontario Government Employment Bureau has charge of sending the girls out to the farms, and I represent the Dominion Conference of the Y.W.C.A., who have for the last three years taken charge of the girls in the matter of housing. I would ask you to try and not consider what I say as being said on behalf of the Y.W.C.A., because I am keenly interested in this movement of the girls to the land, and I am also keenly interested in the building up of the fruit industry. I come here for the purpose of getting the feeling of the meeting as to whether they care to have these camps continued. From what I have heard since coming here I judge that you would like to have these camps continued, and that they are still necessary. The Y.W.C.A. are unable to carry on the boarding houses in the country and come out even, as they can in the city. Last year where camps were provided for 20 or 25 girls sometimes only 4 girls came. I do not know whether that situation can be remedied or not. On the other hand, occasionally a number of girls came in quite unexpectedly, and this hampered us very much in the matter of food supplies. People from the city have the idea that all they have to do is to go out in the country and there they will be able to get chickens and butter and eggs and vegetables without any difficulty and at low prices. That has not been our experience, in fact, we found that we were paying higher prices for vegetables in the country than we could buy them for in the city. We were criticized very strongly for bringing girls out to the country and feeding them on canned vegetables. I said to one man "Have you a garden?" and he said "No." I said "Is there any man in the district that runs a truck garden?" and they did not know of one. Then I said: "How do you propose to feed the girls on fresh vegetables that are not grown within one hundred miles of this place?" Lack of storage in the camps is another serious difficulty, we are unable to buy in large quantities because of that. Ninety per cent. of the House Mothers reported that the fruit growers were too busy to give them any attention and assist them in the matter of buying. One housekeeper told me she had hunted the country over and could not buy potatoes, and one day a farmer told her he could have taken her where she could buy plenty of potatoes at a reasonable price. This year the price of food has been exceptionally high, and the price of labor has gone up, and we were paying our housekeepers and cooks a much higher price than we paid the year before. I am speaking to you of the difficulties, to see whether something cannot be done to eliminate what is rather a big problem with us. Unless something can be done we will have to raise the price of board. I believe the large percentage of the girls earned from $9 to $15 per week this year, and that was very encouraging. I think the fruit growers might give us more assistance in purchasing, and they might furnish us with vegetables and fruit at a more reasonable rate. The question with us is whether we should go on with the work and lose money. I would ask you to formulate some scheme whereby the Y.W.C.A. may be reimbursed or secure some grant whereby they may be enabled to carry on the work. This year there were between 70 and 80 fruit farmers who engaged girls from the camps. The question is, is it worth while to you? The question with the Y.W.C.A. will be "Are they justified in spending public money on this work, and to what extent can we count on the co-operation of the Fruit Growers?" I was very glad to hear the resolution that you have just passed asking the Government to continue the work. Many of the girls will be greatly disappointed if the camps are not continued, and I know that a number of the men have said that they will have to depend on the girls for another year.

MR. FISHER: We are vitally interested in this question in our district, from the fact that we require a large surplus of help over that which is supplied locally. One or two camps in the district is a great relief. I would like to see this movement receive every possible encouragement from this Association. We believe it is useful work. The fact that the Y.W.C.A. have had a deficit is most unfortunate, and I think it is largely due to the fact that in some of the camps they have not had the full complement of girls. Possibly a remedy for that would be to reduce the number of camps. If we can get 40 or 50 girls in our district it will help to relieve the situation.

Moved by MR. FLEMING, seconded by MR. CARPENTER: "That the Board of Directors consider the advisability, or otherwise, of combining the present system of appointing one director from each of the geographical districts with representation according to membership in the Association, and report at the next Annual Meeting."

Moved by MR. FLEMING, seconded by MR. CRAISE, "That a small committee be chosen by the directors to take up the question as to whether Government grades for peaches are desirable, and report to the next meeting of the association.

The following resolution was forwarded for approval by the Canadian Horticultural Association.

Moved by PROF. CROW, seconded by MR. CRAISE: "Whereas a well developed Horticulture is recognized as essential to the welfare and prosperity of Canadian home life, and

"Whereas Horticulture is a definite craft in itself and is not a branch or department of Agriculture, and consists of the more intensive cultivation of fruits, and flowers, and vegetables and ornamental plants, and

"Whereas there is a great shortage in Canada of trained Horticulturists, and

"Whereas scientific research in Plant Physiology, Plant Pathology and Entomology is of vital importance to the future development of Horticulture in Canada, and

"Whereas systematic plant improvement and plant introduction are likewise of fundamental importance to the future of Canadian Horticulture. Therefore be it resolved that this committee recommends the establishment of special facilities for the practical and scientific training of men in Horticulture, and further recommends that all Horticultural organizations in Canada be requested to appoint representatives to a Canadian Council of Horticulture, with a view to formulating plans for the adequate development of Horticultural interests in Canada as outlined herein."

PROF. CROW: This resolution came from a special committee appointed by the Florists' Organization. The special committee, after considering the matter, decided that the thing we need most in this country in connection with horticulture is some authorative body who can speak for the interest of horticulture. They have in mind the establishing of a National Council of Horticulture. That Council would be of an advisory character, and would, where necessary, bring about any new machinery which may be required.

The Convention then adjourned.

Ontario Department of Agriculture

REPORT

OF THE

Horticultural Experiment Station

VINELAND STATION
1919

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
1920

ONTARIO HORTICULTURAL EXPERIMENT STATION

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To His Honour LIONEL CLARKE,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

The undersigned begs to present for the consideration of Your Honour the Report of the Horticultural Experiment Station at Vineland Station for 1919.

Respectfully submitted,

MANNING W. DOHERTY,

Minister of Agriculture.

TORONTO, 1920.

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REPORT

OF THE

Horticultural Experiment Station

1919

INTRODUCTION.

In this report of the Station no attempt has been made to cover all of the various breeding and experimental projects under way. Generally only new projects, and projects in which concrete results of interest to the practical horticulturist have been obtained, are dealt with.

Attention is directed particularly to the peach and strawberry breeding work; to the greenhouse cucumber breeding; to the apple pruning experiment; to the tomato variety test; to the investigations with bottled sweet cider, and strawberries for jam and canning; and in new projects to the sweet corn breeding, and the outlines of the pruning and soil fertility experiments to be started with peaches and apples.

CHARACTER OF THE SEASON OF 1919.

The winter of 1918-19 was particularly mild, the mildest on record for many years. At no time was the ice in the neighboring ponds of sufficient thickness to permit of putting in a supply for cold storage purposes.

The weather for January was mostly fine throughout. The only wintry period of the whole month came during the first week with two inches of snowfall on the 3rd, and a minimum temperature of 5°F. on the 4th. Milder weather followed with thawing temperature on the 7th and disappearance of all snow by the 14th. From the 13th to 24th there were many fine spring-like days with complete thawing out of the ground. Maximum temperature for the month was 50°F. on the 20th. Sap was running in the maple trees several days towards the end of the month. The comparative absence of wind, rain and snow with temperatures slightly above freezing much of the time made January a particularly fine month for the time of year.

February also was particularly fine and mild. The minimum temperature for the month was 10°F. on the 11th. The ground was frozen a bare eight or ten inches deep. Heavy rains fell on the 14th and there was a thunderstorm on the 23rd. The remainder of the month was generally fine and mild with spring-like weather. The frost all came out of the ground and active flies were seen in sunny places out-of-doors. The maximum temperature for the month was 58°F. on the 28th.

March was generally fine and warm, with every promise of an early spring. The land was dry enough for working on the 20th and tree planting was then commenced. Kildeers and robins were observed on the 17th.

April was wet and distinctly disappointing. At no time during the month was the ground dry enough to work. Also there was much cold weather toward the latter part of the month with a particularly cold period accompanied by gales and snowfalls from the north-west on the 24th, 25th and 26th. A minimum temperature during this period of 26°F. was registered. No damage was done, however, as the bloom was very backward.

May was even more disappointing than April. For, owing to the frequent and excessive rains and cool weather, no work was possible on the land until after the 24th of the month. Occasional fine days were insufficient to dry up the land. From the 24th, the weather took a distinct change, becoming particularly fine and warm with a maximum temperature of 89°F. on the 29th.

The first three weeks of June were very warm and wholly without rain. Three days of cooler weather followed with about one inch of rain which temporarily relieved what was becoming quite a serious drought. Very warm weather again followed until the end of the month. The maximum temperature for June was 92°F. on the 15th.

July seemed, if anything, cooler on the whole than June though it still remained very dry. There was one storm of a little over one-half inch of rain on the 20th and a soft steady rain all day on the 31st. There were several other light showers during the month but none of them sufficient to even lay the dust. The maximum temperature of 97°F. was reached on the 3rd and 4th.

The first eleven days of August were a little cooler but still very dry. Up to this time there had been an eleven weeks' drought since the 24th of May with a few intervening showers which, at no time, were sufficient for requirements. A thunderstorm on the 16th of one and a half inches of rain completely relieved the drought. The remainder of the month was good growing weather with no extremes of temperature and frequent light showers. The maximum temperature for the month was 92°F. on the 7th.

September was fine and warm with only a few light showers and no frosts. It was ideal for the maturing of crops. The maximum temperature of 92°F. was on the 8th.

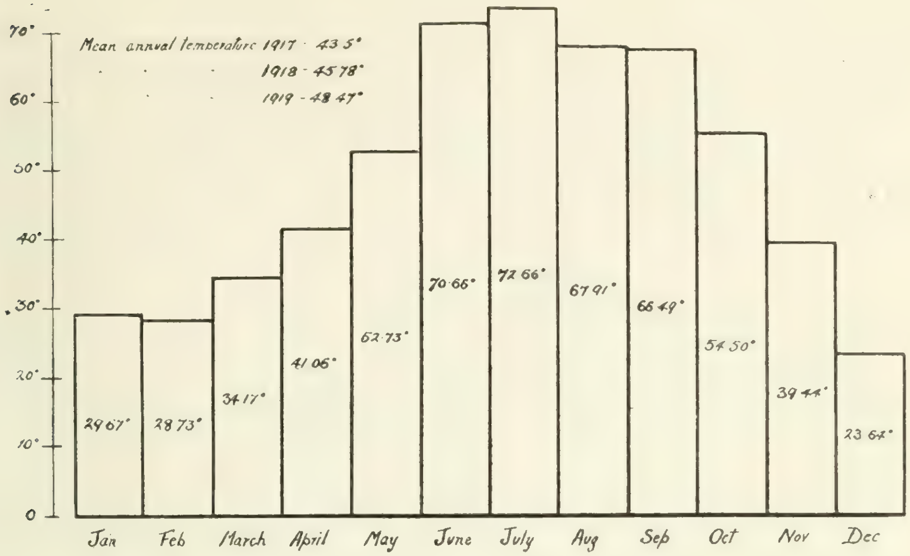
October also was practically free of frost with the minimum going to 32°F. on the 7th. No other frost occurred and tomatoes were picked throughout the month. There was a normal amount of precipitation with rain falling on fifteen days but at no time was the ground excessively wet.

The weather for November was very variable with a little of all kinds of weather. A light frost occurred on the 2nd and the first killing frost of the season on the 9th. The month ended with a very severe windstorm.

December opened quite cold with two inches of snowfall and was marked by winter weather throughout. It was particularly cold from the 14th to the 19th with a minimum of three below on the latter date. There was no rain throughout the month and very little snow.

Summarizing the season of 1919, January, February and March were abnormally fine and mild; April and up until the 23rd of May, very wet and cold; the last seven days of May, all of June, July and the first eleven days of August very warm and dry; the last three weeks of August normal temperatures with plenty of rain; September fine and dry and free from frost; October free of killing frosts with a considerable amount of rain; November, a normal fall month; December very cold.

The accompanying chart gives a complete record of the sunshine, rainfall and monthly mean temperatures for the year 1919.


Mean annual temperature 1917 · 43 5°
" " " 1918 - 45 78°
" " " 1919 - 48 47°
70°
60°
50°
40°
30°
20°
10°
0
29 67°
28 73°
34 17°
41 06°
52 73°
70·66°
72 66°
67 91°
66 49°
54 50°
39 44°
23 64°
Jan
Feb
March
April
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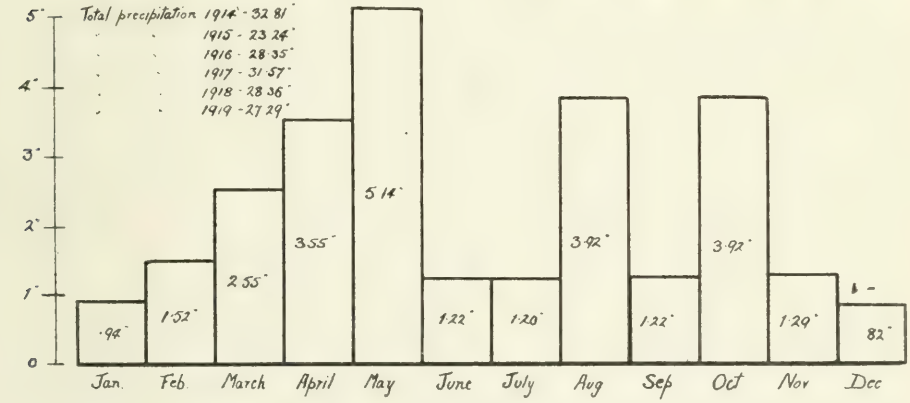
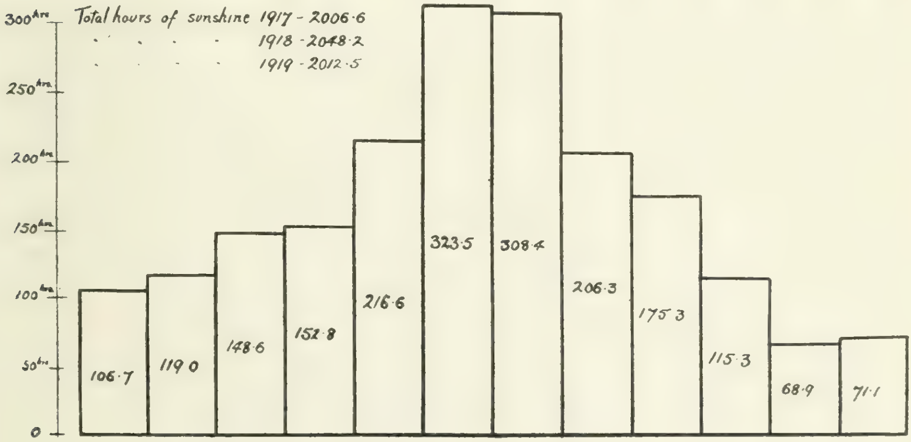

Total precipitation 1914 - 32 81"
" " 1915 - 23 24"
" " 1916 - 28·35"
" " 1917 - 31·57"
" " 1918 - 28 36"
" " 1919 - 27 29"
5"
4"
3"
2"
1"
0
·94"
1·52"
2 55"
3·55"
5 14"
1·22"
1·20"
3·92"
1·22"
3·92"
1·29"
82"
Jan.
Feb.
March
April
May
June
July
Aug
Sep
Oct
Nov
Dec


Total hours of sunshine 1917 - 2006·6
" " " " 1918 - 2048·2
" " " " 1919 - 2012·5
300hrs
250hrs
200hrs
150hrs
100hrs
50hrs
0
106·7
119 0
148·6
152·8
216·6
323·5
308·4
206·3
175 3
115·3
68·9
71·1

PLANT BREEDING

To the list of breeding projects under way given on page 9 of the 1918 Report of the Station, there have been added two further projects, namely, (1) Greenhouse tomato breeding, (2) Greenhouse cucumber breeding.

In the present report, further information is given regarding the breeding of the following: peaches, strawberries, raspberries and blackberries, greenhouse cucumbers, sweet corn.

PEACH BREEDING.

The peach seedlings of 1911 planting are now reduced to four trees. These are all Elberta seedlings and are very similar to Elberta in character and season. The best of the four, however, (11041) is a few days earlier than Elberta and of better quality. It has been used in breeding work and will be retained for that purpose.

The block of Early Crawford seedlings of 1913 planting fruited better in 1919 than in previous years. There were 1,000 trees planted originally in this block, but in 1917 approximately one-third of the trees were cut out in order to give the remainder more space (they were planted 7 ft. by 7 ft.) in an effort to induce them to bear fruit. One hundred and fifty were selected in 1919 as worthy of further trial and the remainder have been destroyed. Of these 150 the ten very best were numbered 120101-120110. Number 120110 is the only tree in the whole block which bore a full crop of fruit. It is a rather dark peach, ripening about with the Late Crawford. With four exceptions which were white-fleshed and one exception which was cling stone, all these trees are yellow-flesh, freestone, high quality peaches of the Crawford type ripening in a season from St. John to Smock. These four white-fleshed peaches may easily have been from stray pits as the pits were obtained from the canning factory. These same four trees showed the green calyx tube and large flowers at the time of blooming, which characters are correlated with white-fleshed fruits, and they were also much more badly attacked with leaf-curl. All the other blooms were of the small carmine type with yellow calyx tube. So, disregarding the four white-flesh fruited trees it may be said that the Early Crawford seedlings have all come true to type being practically all of good appearance and quality and inclined to shy bearing.

Practically all of the hybrids and seedlings of 1913 breeding fruited during 1919. Descriptions and notes were made and the trees deemed worthy of further trial and required for future breeding work only retained. Detailed notes follow:

St. John x Sneed (13041-13043). One tree of this lot fruited in 1917 and was destroyed as being poor in quality, white-fleshed and unworthy of retention. The other two trees fruited in 1919 giving good quality, juicy, white-fleshed, semi-clingstone peaches of medium size ripening with Admiral Dewey. In this cross there is a compromise in season of ripening, quality, freedom and size of pit, but a dominance of white color of flesh.

Elberta x E. Crawford (13051-13057). These seven trees showed a remarkable adherence to the Elberta type but all are slightly better in quality and a few days earlier in season. One tree, however, which had only a few fruits, although all the others had a good crop, showed something of a compromise between the

Elberta and E. Crawford. The fruit was rounder than Elberta, of better color, of decidedly improved quality and the pit less flattened, more oval, with corrugations rougher instead of smooth as the Elberta. All are yellow-fleshed.

E. Crawford x Greensboro (13061-130615). These trees are all the same type of peach; white-fleshed, good quality though somewhat juicy and stringy, as attractive as the Greensboro and ripening in the season of St. John. One was a cling stone while the remainder were semi-cling to nearly free. While these trees may be unsuitable for the commercial grower yet they may give valuable material for breeding purposes. There is a compromise in season, quality and freedom of pit but a complete dominance of white color of flesh.

St. John Seedlings (self fertilized) (13081-13086). All St. John selfed are coming true to type, all are yellow-fleshed, of good quality and ripening in the St. John season. There was a good crop on all trees but one, but the fruit ran somewhat small which, however, may have been due to close planting and poor cultivation.

Elberta Seedlings (self fertilized) (13091-13099). Of these nine trees, two have borne no fruit, the remainder varied in productiveness from light to a good crop. The fruit is all of the Elberta type with as good to slightly better quality, but varying in season from a week before Elberta to the season of Smock. All are yellow-fleshed.

E. Crawford Seedlings (self fertilized) (13101-13104). Of these four trees, two died before fruiting. The remaining trees are Crawford type, yellow-fleshed, free-stone, good quality, medium in size, but with a season about three days later than Early Crawford. Crop was medium only.

New Prolific Seedlings (self fertilized) (13111-131116). Of these sixteen trees only five lived to fruiting age. These five produced fruit true to type varying only in season, being two weeks later than New Prolific and coming pretty well in the Smock season. They are yellow-fleshed, free-stone, but small, late and fuzzy which latter characters render them unfit for retention. The quality is only fair.

Late Crawford Seedlings (self fertilized) (13121-13124). All are Crawford type peaches; yellow-fleshed, free-stone, good quality, medium in size, but with the season of Early Crawford. The crop was, however, somewhat light.

Fitzgerald Seedlings (self fertilized) (13131-131321). Two of these trees died before fruiting. The remainder have all come practically true to the Fitzgerald parent. 1919 was the first year any of the trees bore fruit and the crop varied from very light to medium only. All were yellow-fleshed, free-stone peaches of high quality, varying in season from E. Crawford to Fitzgerald (six days).

Millionaire Seedlings (self fertilized) (13141-13143). There was a very light crop on each tree. The fruit has come true to its parent type, is high colored, good quality, free-stone and ripening in the Crawford season. The fruit is only medium in size but no doubt will improve with proper cultivation. It is of decided high quality and appearance.

Klondyke Seedlings (self fertilized) (13151-13156). All are the same type of fruit; somewhat small, good quality and white-fleshed. The crop varied from a few fruits only to a good crop, the freedom of pit varied from total freedom to total adherence to flesh and the season varied from Greensboro to Fitzgerald.

Leamington Seedlings (self fertilized) (13161-131659). This lot of trees has been described in some detail in previous years. They have been chiefly noteworthy as being early and prolific annual bearers. Practically all of the thirty-nine trees living in 1917 fruited the second year from planting out and the fourth year from seed. Twenty-two of them were then removed as being small, white-fleshed, fuzzy, small fruited peaches. In 1918, of the seventeen left, nine bore heavy crops, but the remaining eight bore only a few fruits or none at all. In 1919, these have been further culled leaving only seven trees one of which (131617) is considered a very valuable peach. They will be used for further breeding work. Of the total of fifty-nine trees originally planted, twenty died before fruiting, thirty-four bore white-fleshed fruit and five yellow-fleshed. The quality varied from poor to good and the size from medium to small with the one exception of 131617, which is medium to large. Most of them were heavily pubescent. The freedom of pit varied from total clinginess to total freedom from flesh at maturity. The season varied only from Greensboro to E. Crawford with the most of them ripening in the season of St. John. On the whole, these trees have shown a remarkable tendency to early and heavy cropping and the fruit is improving in size over former years. One other (131654) also deserves special mention. It ripens early—in the Greensboro season—is yellow-fleshed, a good cropper, hangs on the

Peach blossoms covered with manila bags to secure self-pollinated fruits.

trees well even when left and becoming overripe, but is a semi-cling stone. The fruit, while small, may improve in size with better cultivation.

Golden Drop Seedlings (self fertilized) (13171-13176). Two of these trees never bore any fruit. They had very deeply serrated leaves giving the trees somewhat the appearance of an elm tree. The remaining four trees came generally true from seed to the parent variety, being small, yellow-flesh, fair to good quality, free-stone peaches. Three of them ripened with the Golden Drop and the other about seven days earlier.

Crosby Seedlings (self fertilized) (13191-13194). These trees came practically true from seed, the fruit being small and all yellow-fleshed, fair to good in quality; three having the same season as Crosby and one seven days later. Three were free-stone and one semi-free.

St. John Seedlings (open fertilized) (13231-132312). Two of these trees died before fruiting; the remainder were all yellow-fleshed, fair to very good quality, free-stone peaches of good color. In other words, they have come true to type, four out of ten ripening in the St. John season and six in the E. Crawford season. Size, however, ran from medium to small but they may improve with better cultivation. All had good crops except two trees which stood in a wet place on heavy soil.

Elberta Seedlings (open fertilized) (13241-1324308). A few bore some slight evidence of having been crossed in being of distinct good quality and the pit being less flattened. The fruit of practically all these trees came true to the Elberta type—oval shape (one or two per cent. were more rounded), fair color, medium to thick, long pubescence; tough leathery skin and oval, flattened pit with smooth corrugations. They varied in quality from bitter and inferior to Elberta, to a quality much superior than Elberta but in no way to be compared with Crawford. About 75 per cent. were of better quality than Elberta. The size varied from small to large with about 80 per cent. being medium, under a condition of poor cultivation. A few were semi-cling stones and one was a full cling. The productiveness varied but was nowhere heavy, mostly running to very light, some few trees having no fruit at all. The season varied from about seven days earlier than Elberta to as late as Smock, there being about 10 per cent. earlier and 5 per cent. later with the majority the same season as Elberta.

The following list of trees of the 1913 Elberta seedlings have been saved for further trial, and the remainder have been destroyed with the exception of some which have not yet fruited:

132432—Selected for better color, slightly better quality and several days earlier than Elberta.
132437— “ better color, slightly better quality and several days earlier than Elberta.
132440— “ better color, slightly better quality and several days earlier than Elberta.
132444— ” size but a cling stone, Elberta season, yellow skin and flesh, hence yellow before ripe.
132447— ” better color, slighly better quality, and several days earlier than Elberta.
132449— ” better color, slightly better quality, and several days earlier than Elberta.
132456— ” better color, slightly better quality, and several days earlier than Elberta.
132466— “ high quality, Elberta season. Cut down by mistake but stump left.
132484— “ high quality, Elberta season, better color and being a more globular peach.

132486—Selected for slightly better quality, 3 or 4 days earlier than Elberta and productive on clay soil.
132491— “ being exceedingly late.
1324102— “ slightly better quality than Elberta, better color and productiveness. Cut down by mistake but stump left.
1324120— }
1324155— } Selected as promising.
1324191— }
1324212— }

The following selected seedlings and hybrids have been budded on Elberta stock for distribution and further trial. Distribution will be made in the spring of 1921.

Breeding No.	Parentage.	No. Budded.
131617	(Leamington selfed)	112 trees.
131639	“ “	10 “
131654	“ “	11 “
11041	(Elberta seedling)	10 “
13055	(Elberta x E. Crawford)	10 “
13056	“ “	10 “
13081	(St. John selfed)	10 “
13082	“ “	10 “
13083	“ “	9 “
13084	“ “	10 “
13085	“ “	11 “
13086	“ “	10 “
13103	(E. Crawford selfed)	10 “
13104	“ “	12 “
13121	(Late Crawford selfed)	10 “
13124	“ “ “	10 “
13138	(Fitzgerald selfed)	12 “
131311	“ “	11 “
13191	(Crosby selfed)	11 “
13236	(St. John Seedlings)	10 “
13237	“ “	10 “
132310	“ “	10 “
132311	“ “	10 “
132312	“ “	23 “
19c01	A Seedling from A. H. Culp—possibly Crawford	10 “

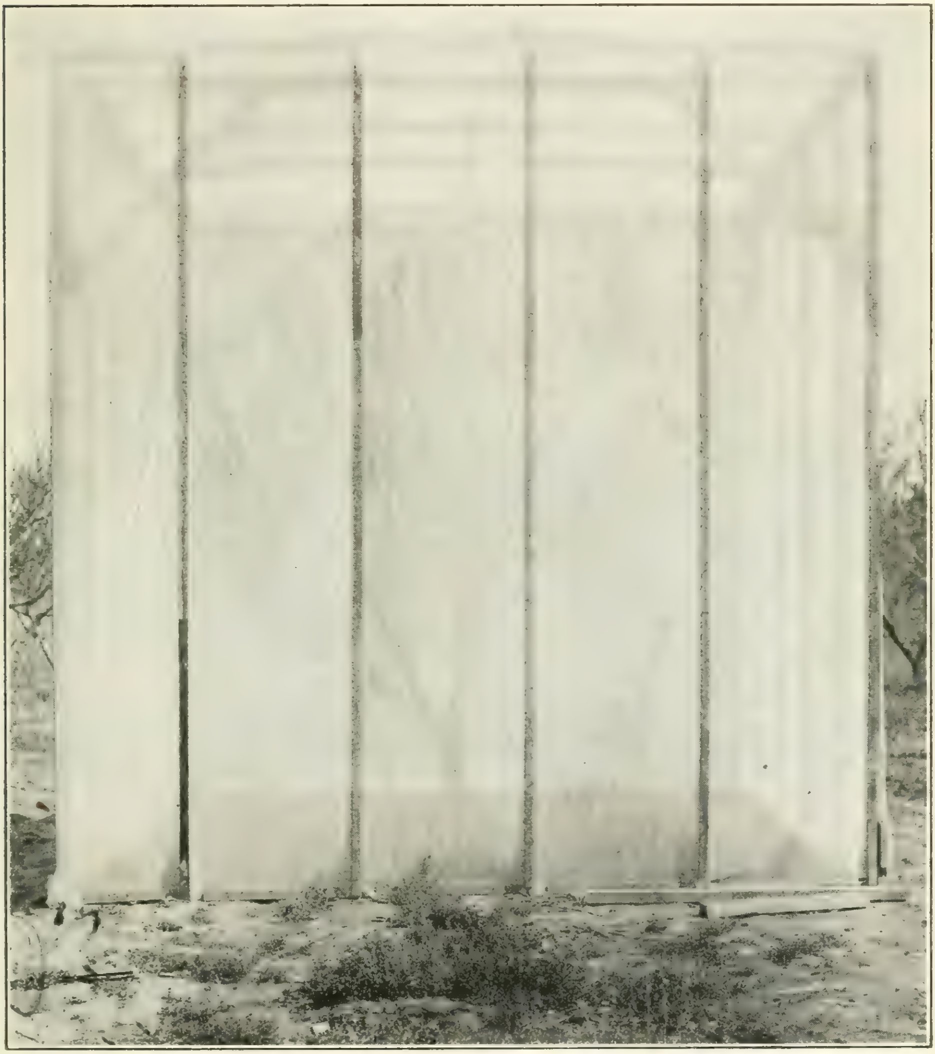
The trees of 1915 and 1916 breeding were sadly depleted by the severe winter of 1917 and 1918. None have fruited as yet.

The trees secured from the 1917 breeding work were transplanted early i April from the cold frames and nursery row to the fruiting plantation on Victoria Farm in Blocks 1 and 3. These trees very little more than filled the vacancies in the plantation that had been planted the year before with the trees of 191 and 1916 breeding.

The pits from 1918 work were cracked by hand in the spring and most of them were found to be decayed. This result is surmised to be largely due to the question of pollination.

The breeding work in peaches during 1919 in consideration of the weather a the time may be considered quite successful.

For crossing work the tent method was again employed, this time with success. Instead of using cotton for the covering material, cheesecloth was used. This gave a partial freedom to air movement and kept down the temperature in high sunshine. These two factors were the controlling influences in the use of th tent; the cheesecloth excluded all insects, which was the essential feature in preventing accidental cross pollination. The experiments of Waugh and Dorsey with plums show that the wind was incapable even on bright sunny days of carrying sufficient pollen for ample pollination even from one tree to another and it was taken that the same principle would here apply with peaches. Two trees were covered with tents and all blossoms on each tree emasculated and later pollinated with one kind of pollen under each tent.



Peach hybridizing. Tree enclosed in cheesecloth tent to prevent open pollination.

Over twelve thousand fruits were gathered as a result of the 1919 breeding work. Five hundred and fifty of these were from the tent covered trees, and the remainder either open pollinated or selfed fruits from hybrids and open seedlings which have come into bearing.

STRAWBERRY BREEDING, 1919.

What proved to be the major portion of the breeding work accomplished in 1919 was done under glass. The plants were runners set in 2-in. pots the previous June and July. They were lifted and potted into 6-in. pots in September and allowed to make roots all the fall in the cold frame where they remained until the beginning of January. They were then brought in and work in cross-breeding proceeded as soon as they were ready. All work with them was complete by the time spring planting, etc., began outside.

Most of the work comprised an effort to cross the native wild white strawberry (*Fragaria virginiana alba*) with some of the cultivated varieties. The virtue of this wild white berry is that the fruit in gathering is very easily plucked leaving the calyx still attached to the plant and causing very little abrasion to the fruit itself. It is the only virtue of the berry beyond the fact that it has a very long season. The plant is very vigorous and is too profuse a runner maker. The berries are white and small and it does not seem to be a heavier yielder.

Crossing the native wild strawberry (right) with Dunlap, a cultivated variety (left.)

The accompanying illustration shows a plant each of S. Dunlap and *Fragaria virginiana alba,* the latter being the larger.

New Varieties of Strawberries.

Following are tabulated descriptions of the final selections from the 1913 strawberry breeding work. These twenty-seven hybrids represent the net result of growing and fruiting several thousands of plants raised from seed. Plants will be distributed in the spring of 1920 for further test.

TABLE I.—SELECTIONS MADE IN 1919 OF STRAWBERRIES OF 1913 BREEDING.

Original Cross	Individual Number and Name	Fruit Ripe 1919	Remarks
Williams x Brandywine	55 Valentine	June 17	Very high quality—selected for this character only.
Williams x Brandywine	419 Valet	" 17	Large size, good berry, of fair quality, with a heavy truss. Resembles Joe in fruit and plants.
Brandywine x Williams	713 Valiant	" 17	Good quality, smooth, oval berry. Low in yield.
S. Dunlap x E. Ozark	1345 Valid	" 17	Large dark berry ; heavy yield and a little better quality than 1352 but not quite so attractive nor so easily bruised. Stood up but color too dark.
S. Dunlap x E. Ozark	1352 Vendor	" 17	Large very dark berry with crimson interior. Fair quality but acid and bruises very easily. Stood up fairly well but color too dark. Vigorous plant.
S. Dunlap x E. Ozark	1467 Valonia	" 12	An early, bright, comparatively light colored, attractive berry. Vigorous plant and fair in other qualities. Stood up poorly but retains brightness in storage.
S. Dunlap x E. Ozark	1580 Vambrace	" 17	Fair to good all round. Stood up well in storage but lost brightness of color.
S. Dunlap x E. Ozark	1563 Valor	" 12	A good early but runs small with small foliage.
S. Dunlap x E. Ozark	1702 Vandyke	" 12	A good early.
S. Dunlap x Brandywine	1717 Vanessa	" 17	A large berry with recurved calyx though somewhat pale interior ; somewhat soft though seeds are well placed as to depth, with a mild pleasing flavor. Light crop and berry fit only for home use. Stood up well and retains color well.
S. Dunlap x Williams	1787 Vanilla	" 17	Good large berry with attractive color, fair to good quality but slightly acid. Good cropper but stood up only fair.
S. Dunlap x Pocomoke	1829 Vanquish	" 19	A good cropper but somewhat late. Stood up fairly well in storage.
Williams x E. Ozark	2240 Vantage	" 17	A good large berry of fair quality which ripens evenly all over. Stood up very well in storage but color a little dark,
Williams x E. Ozark	2093 Vendue	" 10	An excellent early (the first to ripen). A good cropper though perhaps running a little small.
Williams x S. Dunlap	2317 Vaquero	" 17	A good large berry with recurved calyx but somewhat flat and soft. Stood up well in storage.
Williams x S. Dunlap	2577 Varangian	" 17	A very large berry with recurved calyx though somewhat flat. Seeds well placed for shipping (prominent) and stood up extremely well in storage—the best of any in fact.
E. Ozark x Williams	2689 Vassal	" 12	A good early.
E. Ozark x Michel's Early	2757 Vast	" 12	A good early but berries running somewhat small. Stood up fairly well in storage.

TABLE I.—SELECTIONS MADE IN 1919 OF STRAWBERRIES OF 1913 BREEDING.—*Continued.*

Brandywine x Michel's Early	2991 Vaunt	June 12	A good early.
Pocomoke x E. Ozark	4231 Vavasor	" 17	A good cropper and large berry of fair quality. The flesh bruises easily and it stood up poorly in storage, therefore of doubtful value.
Pocomoke x E. Ozark	4271 Vaward	" 12	An early and good cropper and large smooth berry without tip seeds; a little soft though stood up well in storage.
Pocomoke x E. Ozark	4304 Vector	" 17	Large smooth berry without tip with good color, remaining bright and stood up well in storage. Seeds on berry well placed. Good cropper.
Sample x S. Dunlap	4702 Veda	" 17	Very large berry (selected for size) seeds green, prominent. Stood up extremely well in storage.
Sample x E. Ozark	4974 Vedette	" 17	A fair berry with lots of fruit and extremely large foliage though somewhat late. Stood up poorly in storage.
Nettie x Williams	5675 Vendance	" 30	A very late, large, bright, oval berry; good cropper and excellent quality. Should be a good berry to extend the strawberry season.
Joe x St. Louis Prize	5689 Venus	July 2	An extremely late, large, oval bright berry. Should be a good berry to extend the strawberry season.
Parson's Beauty x Michel's Early	14012 Vena	June 17	White fleshed but good quality berry.

A number of new varieties from various sources were received and planted out May, 1919, for trial:

Rumark		From Kellogg's, Three Rivers, Mich.
Bedarena		
Trebla		
Kellko		
Sionilli		
Euresko		
Fragaria virginiana A		From C. E. F., Ottawa.
" " B		
" " C		
" *vesca*		
" Pacific Coast		
" *virginiana glauca*		
Olga Petrova		From E. B. Stevenson, Guelph.
S. P. I. 43997 *Fragaria vesca*		From Office of Foreign Seed and Plant Introduction, Washington, D.C.
Beaderarena	Ettersburg No. 80	From A. E. Etter, Ettersburg, California.
Ossie	" No. 84	
Nor-j	" No. 89	
Trebla	" No. 121	
Euresko	" No. 412	
Delecto		
Fendalcino		

One dozen plants each of fifty-two O. A. C. varieties were received for trial and planted out May, 1919.

RASPBERRY AND BLACKBERRY BREEDING.

The work in *Rubus* crossing during 1919 was widened out to include several inter-species crosses and some selfing of hybrids of former inter-variety crosses. The following table gives a record of the 1919 work in crossing:

TABLE II—RUBUS BREEDING, 1919

Cross	No. of Bags	No. of Poll	No. of fruits gathered	Breeding Number	Remarks
Logan berry x Cuthbert	8	42	29	1901	
" x Wilson	9	43	10	1902	
" (parthenogenetic test)	1	4	....	....	
Wilson x Loganberry	11	205	57	1903	Mostly nubbins.
" x Cuthbert	10	158	5	1904	"
Cumberland x Cuthbert	10	92	81	1905	
" selfed	13	130	60	1906	Perfectly self-fertile. Many of the late fruits not gathered.
" (parthenogenetic test)	1	8	....	....	
Cuthbert x Cumberland	10	73	1	1907	It would seem that the black will cross with red freely, but not vice versa.
" x Loganberry	10	75	24	1908	
" x Wilson	10	72	43	1909	
Kansas selfed	14	140	71	1910	Perfectly self-fertile.
Black Diamond selfed	14	140	78	1911	" "
(Wilson x Lucretia) selfed ...	10	100	13	1912	
McDonald Seedlings	......	......	50	1913	Very early, very shy bearer blackberry. Ripe July 9, 1919.
15015 selfed (Gregg x Cuthbert (purple cane)	10	100	....	....	Self-sterile.
15016 selfed "	10	100	43	1914	Self-fertile
15017 " (blackcap)	10	100	....	....	Self-sterile
15018 " "	10	100	29	1915	Self-fertile
15019 " (red)	10	100	17	1916	"
150110 " "	10	100	....	....	Self-sterile
15022 " (Cuthbert x Gregg)	10	100	5	1917	Partially self-fertile.
15111 " (Gregg selfed ....)	10	100	2	1918	Self-fertile. Most flower spikes died.
15112 " "	10	100	50	1919	Self-fertile.
15123 " (*R. occidentalis* x R strigosus)	10	100	28	1920	Partially self-sterile.
15124 " "	10	100	....	....	Self-sterile.
15133 " (*R. occidentalis* selfed)	10	100	23	1921	Self-fertile
15134 " "	10	100	65	1922	"
15153 " (*R. strigosus* x *R. occidentalis*)	10	100	....	....	Self-sterile
15154 " "	10	100	....	....	"
15204 " (*R. strigosus* selfed)	10	100	1	....	Practically self-sterile. Fruit not saved.
14081 " (Gregg seedling) ...	14	140	51	1923	Self-fertile.
R. villosus seedlings	......	......	50	1924	
R. innominatus seedlings	......	......	70	1925	

The Bureau of Plant Introduction of the U. S. Department of Agriculture kindly sent us the following blackberry root cuttings which were rooted and planted out in the spring:

No. 2 Blackberry (Strawberry flavored).
" 6 " (Lucretia x Gardenia).
" 4 " (Himalaya x Kittatinny).
" 1 " (Soft Core).

Prof. Ness, of College Station, Texas, sent blackberry root cuttings, which were rooted and planted out in the spring, of McDonald Seedlings, called by him Spineless Diffuse.

One dozen plants each of Count, Brighton and St. John raspberries were received from the C. E. F., Ottawa.

A new *Rubus* variety plantation was planted out during the spring of 1919, comprising a row of twenty-five-feet each of the following varieties:

Loganberry
Strawberry-raspberry
Wineberry

Blackberries:
  Ancient Britain
  Agawam
  Early Harvest
  Early King
  Eldorado
  Erie
  Gainor
  Himalaya
  Iceberg
  Joy
  Kittatinny
  McDonald
  Mersereau
  No. 1 Blackberry
  No. 2 Blackberry
  No. 4 Blackberry
  No. 6 Blackberry
  Premo
  Snyder
  Spineless Diffuse
  Taylor
  Wilson
  R. flocculosus
  R. fruiticosus
  R. Innominatus
  R. lasiocarpus
  R. sp.

Dewberries:
  Austin
  Lucretia
  R. canadensis

Raspberry:

Blackcaps:
  Black diamond
  Conrath
  Cumberland
  Gregg
  Hilborn
  Idaho
  Kansas
  Plum Farme.
  R. occidentalis

Red Raspberries:
  Brighton
  Count
  Cuthbert
  Empire
  Herbert
  Marlborough
  Ontario
  R. strigosus
  St. John
  Superlative
  Everbearing red raspberry
    Erskine Park
    St. Regis

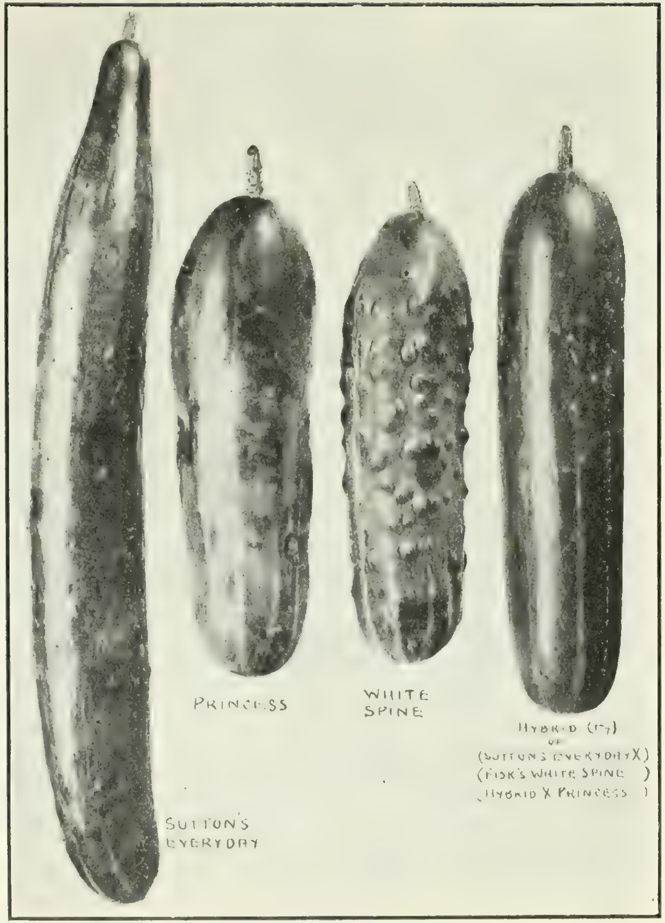
Purple Cane Raspberries:
  Cardinal
  Columbian
  Shaffer

Yellow Raspberry:
  Golden Queen

GREENHOUSE CUCUMBER BREEDING.

In 1915 a breeding project was started at this Station to produce if possible a greenhouse cucumber of the ordinary white pine type which would set its fruit without fertilization under greenhouse conditions. Present varieties of cucumbers used for greenhouse work will set some fruit without fertilization, but generally they do not set in commercial quantities, especially during the winter. This means that hand pollination must be resorted to or that bees must be introduced into the greenhouse. Either method is unsatisfactory. Hand pollination entails a great deal of work and bees will not work to advantage in the moist, humid atmosphere necessary to cucumber growing.

The work, as originally started in 1915, consisted in crossing the white spine type of cucumber with the English long type. This latter type was used as it



Parent types of greenhouse cucumber hybrid and selected type of hybrid on the right.

Greenhouse cucumber hybrid showing free setting habit and type fruit.

sets its fruit freely under greenhouse conditions and without fertilization. However, our markets demand a short type of cucumber so that the English long cucumber is not grown to any extent.

Owing to unsuitable greenhouse conditions and lack of space, this work as started in 1915 had finally to be abandoned. Attempts were made to carry the work on outdoors but unsuccessfully.

In the spring of 1919 another start was made on the project with hybrid seed secured from the Horticultural Department of the Agricultural College, Guelph. Since securing this seed, selection has been carried on for three generations with the result that several very desirable types of greenhouse cucumbers have been obtained, types which are apparently capable of setting fruit very freely without fertilization. Further selection work for another generation or two has yet to be done. One of the accompanying illustrations shows several fruits growing on a plant. The other illustration shows the parent types of the hybrid together with the hybrid itself. The fruit in this illustration is Sutton's Everyday representing the English long type parent. Next is illustrated Princess, another variety used as one of the parents. The third from the left is Davis Perfect representing the white spine type of cucumber commonly grown in this country (Fisk's White Spine was the variety used in the breeding work). On the right is shown the hybrid evolved from the foregoing parentage. Its smoothness and color of skin are secured from Sutton's Everyday, as is also its free setting habit. The heavy butt and nose are inherited from the Princess. The white spine comes from the Fisk's White Spine, as both Sutton's Everyday and Princess are black spine varieties.

If the selections continue to produce as they have produced in the last two crops, seed will be distributed in 1921.

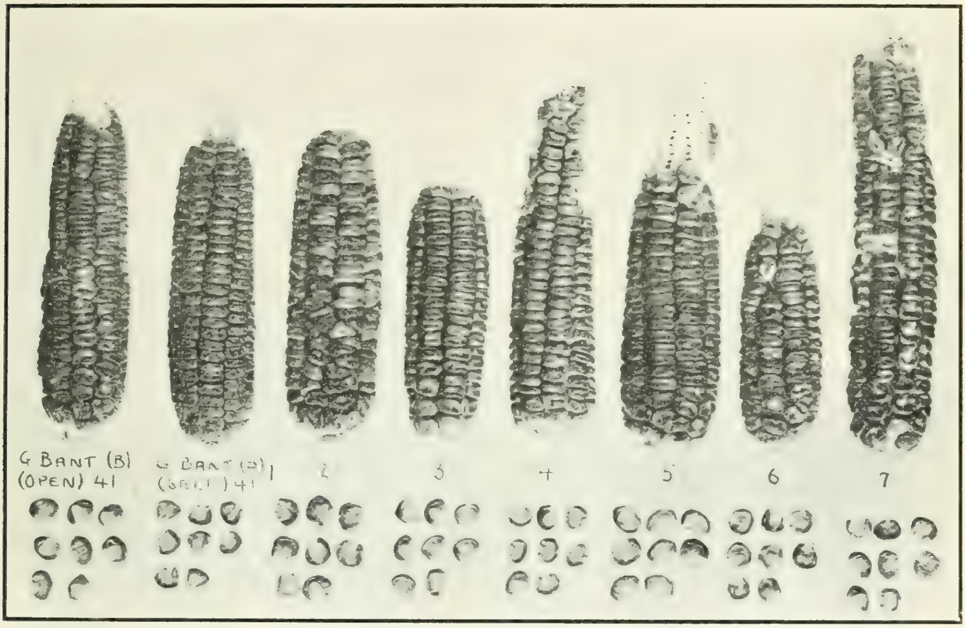
— — —

SWEET CORN BREEDING.

Our present varieties of sweet corn are known to be very impure. Such impurities may not show up under general field culture where the plants are naturally cross fertilized. If, however, individual plants are self fertilized and this self fertilized seed is grown, the resulting plants and cobs show a great lack of uniformity. The accompanying illustration shows this very clearly. The seed from which these cobs were grown was supposed to be a superior selected strain of Golden Bantam. Self fertilization has shown that there is a great lack of uniformity in the strain both as to size and shape of cob and wrinkling of the kernels.

Recent work by Jones, of Connecticut, indicates very clearly and forcibly how present varieties may be more or less purified by self fertilization. Such self fertilization *apparently* reduces the vigor of the plant very markedly and weakens its constitution. It has been shown, however, that self fertilization in itself does not cause this so-called degeneration but simply brings out weaknesses already existing within the variety. Also the loss in vigor is only temporary and can always be gotten back by hybridization or crossing inbred strains. In fact, the vigor and yield secured by crossing such inbred strains has been found by Jones to be greater than the vigor and yield of the original variety. This is simply due to the fact that, as previously stated, inbreeding has brought to light weaknesses existing within the variety and these weaknesses have been eliminated by either conscious or unconscious selection.

In the spring of 1919, work was started at this Station along the above lines with the following varieties: Golden Bantam, Charlevoit, Cooke, Stowell's Evergreen, Black Mexican. Inbred strains of all of the above varieties are being secured. The plan is to secure eight or ten selections of each of these varieties, inbred or self fertilized, for five or six years and then allow the selected inbred strains of any one variety to cross among themselves. That is, the inbred strains of Golden Bantam for example, would be planted by themselves and allowed to cross freely. The result would not be a new variety as all of the strains used would be Golden Bantam, but it should be an improved variety as weaknesses existing within the original parents would be eliminated by the constant self fertilization.



Sweet corn breeding. Cobs show a great lack of uniformity, though grown from a strain of Golden Bantam advertised as a superior selected strain.

Crossing between varieties is also being carried on. At the present time, three definite hybrids are being worked with, as follows: Stowell's Evergreen crossed with Black Mexican; Golden Bantam crossed with Black Mexican and Golden Bantam crossed with Stowell's Evergreen.

* * *

PLANT IMMIGRANTS RECEIVED.

From Prof. H. Ness, College Station, Texas: Root cuttings, *Spineless Diffuse*, blackberry.

From Dr. Van Fleet, Washington, D.C.: Seeds S. P. I. 35005. *Fragaria vesca;* Alpine Strawberry from Chili.

From Office of Foreign Seed and Plant Introduction. Bureau of Plant Industry, Department of Agriculture, Washington, D.C.:

		Acer buergerianum	2	plants
S. P. I.	41395	*Amygdalus persica* (dwarf)	1	plant
"	45751	*Solanum bullatum veliosa*	2	"
		Solanaceae Capoeira branca	1	"
"	47122	***Rubus bogotensis*** **seed**		
"	33223	***Prunus avium***	1	tree
"	26503	*Amygdalus persica necturina*	3	"
"	20072	*Prunus*	1	"
"	17154	*Prunus armeniaca*	1	"
"	32670	" "	1	"
"	44686	*Amygdalus davidiana*	5	"
"	30648	" *persica necturina*	3	"
"	36125	" " "	3	"
"	34684	" " "	3	"
"	24807	" " "	4	"
"	33219	" " "	5	"
"	26485	*Pyrus species*	1	"
"	30352	" *serotina*	1	"
"	43185	" *communis*	1	"
"	43183	" "	1	"
"	28497	" *chinensis* x *communis*	1	"
"	37071	" *species*	1	"
"	43186	"	1	"

EXPERIMENTAL POMOLOGY

The following experimental projects are dealt with in this report:

(1) Summer vs. winter pruning of apples vs. no pruning.

(2) The study of the interrelation of pruning, soil fertility and distance of planting in the peach.

(3) The study of the effect of varying degrees of dormant pruning on the development of the apple.

(4) Variety tests of plums.

(5) Miscellaneous pomological notes.

A heavily winter pruned Cranberry tree. In this particular variety the trees selected for the heavy winter pruning averaged larger in 1914, when the experiment was started, than the trees in the unpruned block.

The data given herewith on summer vs. winter pruning of the apple vs. no pruning summarize the results of this experiment up to and including the season of 1919. Certain conclusions are drawn.

With reference to projects 2 and 3 as above, these have only been outlined as yet, the intention being to plant the orchards and start the experiments in the spring of 1920. The complete outline of each experiment as planned is included in this report so that those interested may become familiar with the projects at the earliest possible date and may offer helpful criticism.

SUMMER *VS.* WINTER PRUNING OF APPLE TREES *VS.* NO PRUNING.

This experiment, started in 1914, consists in a comparative test of three different pruning treatments, winter or dormant pruning, summer pruning, and no pruning. Although the experiment has not been conducted long enough to gather conclusive results, especially on the ultimate yields of the various systems of pruning, yet we have presented to us indications of what these results will be, and moreover, have data which positively show the advantages of light pruning for the young orchard. Beyond this our results do not go, as the orchard is still young. These results from the early life of the orchard, however, are clear and are therefore presented accordingly.

An unpruned tree of Cranberry variety. Unpruned trees as a whole have borne 76 pounds per tree for a five-year period, as compared with 48 pounds for summer (or lightly) pruned trees and 15 pounds for heavily pruned trees.

The experiment, as originally outlined, specified the following for each kind of pruning.

Winter Pruning.—Trees to be severely cut back, thinned out in March or April, the object being to form a framework pleasing to the eye and which at the same time would ultimately be capable of carrying a maximum load of fruit, i.e., to be pruned according to the then commonly accepted method for young trees until bearing age. Fruit bearing was not to be taken into consideration for at least seven years.

Summer Pruning.—The trees under this treatment to be well thinned out in August when growth is ceasing and the maturing of wood commences. Terminal growths to be cut back only sufficient to keep the tree within bounds which usually involves only tipping back the main branches. The original objects of this type of pruning were to promote *early bearing,* admit as much sunlight as possible and at the same time not sacrifice the natural shape of the tree any more than necessary.

No Pruning.—Trees left to make natural growth with the exception of the removal of broken or otherwise injured limbs.

Summer (or lightly) pruned tree of Cranberry variety. Summer pruned trees of all varieties have, as a whole, increased 2.79 inches in trunk diameter, in five years' growth, as compared with 2.86 inches for unpruned trees and 2.40 inches for heavily winter pruned trees.

In the light of our present knowledge of pruning, it will be seen that this experiment as outlined in 1914 has several objections. In the first place the consensus of opinion from various experiments seems to be that so-called summer pruning given at the time growth has practically ceased is equivalent in its effect to dormant or winter pruning. If this is so, then our experiment is really a comparison of heavy dormant pruning vs. light dormant pruning vs. no pruning. This points out a further defect which is that *moderate* dormant pruning has not been taken into consideration.

In spite of these well founded objections, however, our results while of course incomplete as yet, have been of very considerable value.

SUMMARY OF RESULTS.

(1) The heavily dormant pruned trees have made much less growth as indicated by the diameter of the trunk and spread of branches than either the unpruned or summer pruned trees. Moreover, the summer pruned and unpruned trees have been bearing fruit since 1915, which would lessen their ability to make new growth. Their real gain over the heavily pruned trees is therefore greater than the figures in Table 1 would indicate.

(2) The dormant pruned trees have been much later in coming into bearing, producing in 1915 only three pounds of fruit for the whole block as against 127.7 lbs. for the summer pruned block, and 209.4 lbs. for the unpruned block. With the season of 1919 and those intervening between 1915 and 1919 the ratio has been practically the same. Heavily dormant pruned trees have barely started to bear as yet while the summer pruned and unpruned trees have increased in productiveness each season.

(3) The summer pruned trees (probably equivalent in effect to light dormant pruning) have made considerably more growth than the heavily pruned trees, and have practically held their own with the unpruned trees except in the case of the Greening variety, where the unpruned trees have outdistanced the summer pruned trees.

(4) Unpruned trees have made more growth than either of the other two systems, though very little more than the summer pruned trees. They are also continuing to outyield the other systems of pruning as will be shown in later tables. These unpruned trees, however, as a whole are becoming very dense, increasing very materially the difficulty and cost of spraying, picking, etc. There are indications also that the fruit is falling off in color due to the dense growth. This density of growth, of course, varies with the variety, the Spy being very thick and bushy, while varieties such as Wealthy and Duchess are quite open. Even these varieties, however, lean badly from the prevailing wind due to the resistance offered by their unchecked growth.

CONCLUSIONS.

From the above, therefore, it is evident that the lighter the pruning the greater the growth, the earlier the tree comes into bearing, and the heavier the yield during the early period of the tree's life at least. But although the unpruned trees have made the greatest gains to date, the lightly summer pruned trees are very little, if any, behind, especially when the increased cost of spraying, picking, growing lack of color, and the general undesirable condition of the tree for future crops are considered. To redeem such an unpruned orchard would necessarily retard its crops for a period and thus the earlier gains from no pruning would possibly be lost.

Light annual pruning just sufficient to retain the proper shape of the tree to allow sunlight and air to get through and to keep out all crossed and broken branches seems, therefore, to be the proper method to pursue for the young orchard until it comes into bearing. After bearing age is reached, pruning will likely have to be more severe so as to maintain a proper supply of new wood each year. What constitutes severity of pruning will, of course, vary with the variety.

THE EXPERIMENT IN DETAIL.

The outline of this experiment appears in the 1915 Report of the Horticultural Experiment Station, page 45. In the 1916-17 Report, pages 44-48, the total yields and the increase in trunk diameters for 1914-1917 are given together with a summary of results up to that time. Copies of these reports can be secured by writing to the Department of Agriculture, Parliament Buildings, Toronto. Other information has appeared from time to time in the Fruit Branch Circular and the *Canadian Horticulturist.*

The orchard was set out in 1911 and the pruning experiments started in 1914. Records of the different systems of pruning have been made annually as follows:

(1) Diameter of the trunk (taken one foot below the lowest permanent branch).

Row of winter pruned trees on left; summer pruned trees on right.

(2) Date of blooming.

(3) Number of blossom clusters per tree.

(4) Weight of fruit from each tree.

(5) Any injury or disease to the trees occurring from any cause whatever.

(6) Any special features such as difference in color of fruit, difficulty in picking due to dense growth, etc.

Table III gives for each year up until 1919 the average diameter in inches of the trunks of each variety for each system of pruning and the total increase in diameter in inches which has been made since the start of the experiment in 1914. There are five trees in each individual plot for the first nine varieties (except for odd casualties) and from twenty-five to thirty trees in each plot for the last five varieties, Duchess, Dudley, Ontario, Wagener and Wealthy (planted as fillers).

TABLE III.—COMPARATIVE TABLE OF AVERAGE DIAMETERS OF STANDARD AND FILLER VARIETIES, WINTER PRUNED, SUMMER PRUNED AND UNPRUNED TREES FROM 1914 TO 1919.

Variety	Kind of Pruning	Average diameters in inches					Total increase in inches
		1914	1916	1917	1918	1919	
Hyslop	Winter	1.47	2.35	2.68	3.55	3.75	2.28
	Summer	1.39	2.26	2.76	3.60	4.00	2.61
	Unpruned	1.43	2.53	3.12	4.15	4.35	2.92
McIntosh	Winter	.94	1.98	2.37	3.12	3.58	2.64
	Summer	1.22	2.43	2.88	3.76	4.30	3.08
	Unpruned	1.02	2.19	2.72	3.68	4.14	3.12
Jonathan	Winter	1.31	1.99	2.42	2.99	3.25	1.94
	Summer	1.19	2.26	2.70	3.38	3.84	2.65
	Unpruned	1.26	2.38	2.77	3.54	3.88	2.62
Cranberry	Winter	1.57	2.57	2.95	3.68	4.20	2.63
	Summer	1.62	2.72	3.22	4.38	4.82	3.20
	Unpruned	1.47	2.80	3.19	4.30	4.47	3.00
Hubbardston	Winter	1.36	2.04	2.47	3.26	3.77	2.41
	Summer	1.32	2.26	2.67	3.64	4.06	2.74
	Unpruned	1.26	2.46	2.82	3.56	4.00	2.74
King	Winter	1.27	2.31	2.75	3.80	4.24	2.97
	Summer	1.20	2.41	2.87	3.97	4.43	3.23
	Unpruned	1.46	2.67	2.98	4.23	4.80	3.34
Baldwin	Winter	1.15	2.11	2.45	3.38	3.62	2.47
	Summer	1.28	2.17	2.80	3.96	4.30	3.02
	Unpruned	1.28	2.48	2.93	4.06	4.50	3.22
Greening	Winter	1.07	2.12	2.48	3.44	3.88	2.81
	Summer	1.32	2.17	2.57	3.50	3.90	2.58
	Unpruned	1.23	2.61	3.07	4.18	4.80	3.57
Spy	Winter	1.26	2.01	2.31	2.97	3.38	2.12
	Summer	1.27	2.12	2.54	3.42	3.82	2.55
	Unpruned	1.30	2.29	2.74	3.70	3.95	2.65
Duchess	Winter	1.04	1.92	2.21	2.90	3.19	2.15
	Summer	.96	2.01	2.33	3.11	3.43	2.47
	Unpruned	1.07	2.14	2.43	3.16	3.50	2.43
Dudley	Winter	1.19	2.06	2.47	3.24	3.53	2.34
	Summer	1.17	2.23	2.59	3.42	3.90	2.73
	Unpruned	1.22	2.38	2.81	3.51	3.93	2.71
Ontario	Winter	1.03	1.95	2.29	3.03	3.41	2.38
	Summer	1.14	2.21	2.57	3.46	4.21	3.07
	Unpruned	1.10	2.15	2.63	3.52	3.72	2.62
Wagener	Winter	1.26	2.10	2.42	3.03	3.36	2.10
	Summer	1.18	2.18	2.53	3.21	3.67	2.49
	Unpruned	1.15	2.31	2.67	3.42	3.61	2.46
Wealthy	Winter	1.17	2.09	2.38	3.32	3.54	2.37
	Summer	1.16	2.18	2.55	3.35	3.86	2.70
	Unpruned	1.19	2.42	2.77	3.54	3.81	2.62

An analysis of the above table shows that irrespective of the size of the tree at the start of the experiment the summer (lightly) pruned and unpruned trees have made uniformly greater gains than the heavily winter pruned trees. As between the summer pruned and unpruned trees there is very little difference, the unpruned trees having a slight advantage on the whole. This advantage is quite marked in the Greening variety. A study of the last column of figures, total increase in diameter in inches 1914-19, gives a ready and accurate comparison of the three types of pruning.

With reference to the record on blooming season, no differences have as yet been observable within a variety as to date of blooming.

In recording the number of blossom clusters, counts were taken up to and including 1916. Since that time the amount of bloom has been estimated only and simply serves as a guide to the amounts of fruit set in the particular year.

Table IV gives the average number of blossom clusters per tree for the year 1916 (the last year for which actual counts were made). The difference in favor of light pruning for young trees is fully as marked as in the previous table.

TABLE IV.—AVERAGE NUMBER OF BLOSSOM CLUSTERS PER TREE FOR THE YEAR 1916.

Variety	Winter Pruned		Summer Pruned		Unpruned	
	No. Trees	Ave. No. per Tree	No. Trees	Ave. No. per Tree	No. Trees	Ave. No. per Tree
Hyslop	12	8	10	290	12	434
McIntosh	6	....	5	1	6	4
Jonathan	6	16	5	331	6	506
Cranberry	6	....	5	100	6	33
Hubbardston	6	1	5	140	6	276
King	6	....	5	13	6	62
Baldwin	6	....	5	11	6	52
Greening	6	1	5	113	6	152
Spy	6	....	5	....	6	....
Ontario	36	9	34	31	32	81
Wealthy	36	5	34	102	32	131
Wagener	36	4	34	139	32	264
Duchess	36	4	34	59	32	189
Dudley	24	4	23	266	21	593

Table V gives the average yield in pounds for each tree for the period 1915-1919. In the last column is given the total average yield since the trees started to bear. Average yields as given therefore are directly comparable and show the total yield for each variety and each system of pruning for the five seasons the trees have been in bearing.

TABLE V.—AVERAGE YIELD PER TREE FOR EACH SEASON AND TOTAL YIELD PER TREE FROM 1915-1919.

Variety	Type of Pruning	Average Yields for					Total average yield for all trees alive, 1919
		1915	1916	1917	1918	1919	
Hyslop	Winter	....	1.96	.99	32.62	57.62	93.26
	Summer	.20	14.94	.96	32.80	32.80	82.22
	Unpruned	.30	33.84	1.05	41.30	53.00	140.63
McIntosh	Winter	....	....	....	15.20	1.00	16.20
	Summer	....	.85	....	59.10	.80	60.75
	Unpruned	....	....	2.04	80.10	1.30	83.44
Jonathan	Winter	....	.30	....	12.50	....	12.87
	Summer	....	9.35	....	26.40	8.40	44.15
	Unpruned	....	16.60	.18	62.00	2.50	81.28
Cranberry	Winter	....	....	....	....	....	....
	Summer	.40	.30	....	4.40	11.50	16.60
	Unpruned	....	.25	6.12	3.75	22.75	32.87
Hubbardston	Winter	.25	.20	.18	....	....	.63
	Summer	....	25.90	....	46.40	.10	72.40
	Unpruned	.60	19.32	3.30	91.60	5.40	120.22
King	Winter	....	....	....	....	....	....
	Summer	....	.45	.20	1.25	1.00	1.75
	Unpruned	....	2.75	.22	7.66	3.66	12.55
Baldwin	Winter	....	....	....	....	....	....
	Summer	....	2.85	....	12.00	3.40	18.25
	Unpruned	....	6.30	....	7.20	7.60	21.10
Greening	Winter	....	.20	....	1.00	.10	1.30
	Summer	....	9.75	.08	25.10	18.00	52.93
	Unpruned	.20	10.40	.82	22.20	76.20	96.17
Spy	Winter	....	....	....	....	....	....
	Summer	....	....	....	....	....	....
	Unpruned	....	....	....	1.60	....	1.60
Duchess	Winter	....	2.37	.09	12.20	12.92	27.71
	Summer	....	8.80	1.57	46.60	7.48	64.32
	Unpruned	.03	26.18	1.39	67.96	2.03	96.88
Dudley	Winter	....	.61	.08	10.90	16.85	28.44
	Summer	....	10.63	1.07	55.52	28.82	95.12
	Unpruned	2.17	23.61	1.33	63.30	19.62	112.17
Ontario	Winter	....	.75	....	.50	1.75	1.49
	Summer	....	6.20	.22	27.22	1.87	36.53
	Unpruned	.15	16.00	.50	50.28	12.20	68.81
Wagener	Winter	....	1.77	.07	6.13	6.41	13.61
	Summer	.16	13.20	.56	28.28	15.77	53.36
	Unpruned	.84	22.08	1.16	49.30	10.68	84.74
Wealthy	Winter	.10	1.41	.09	9.71	.88	11.85
	Summer	4.30	12.59	.34	56.34	1.53	75.44
	Unpruned	10.53	23.58	2.67	70.87	6.60	118.00

NOTE.—In some cases the sum of the average yields for each season does not equal the total yield given in the last column. This is due to the death of some trees after they had come into bearing, their yield being included in the (seasonal) averages until the time of their death. In the total yield, however, the crops of trees which have died have not been included.

With reference to the susceptibility to disease under different systems of pruning, there is little conclusive evidence. Blight is responsible for most of the deaths, a few trees succumbing to winter injury and two to girdling. It is worthy of note, however, that of the winter pruned trees only 9 out of 190 have died as against 18 summer pruned trees, and 16 out of 171 unpruned trees. The heaviest losses have been in Hyslop, King and Wagener.

The impression might be gained from our results in this pruning experiment that summer pruning is a desirable practice and to be recommended. As pointed out, however, at the beginning of this paper, the summer pruning given has, in all probability, been simply equivalent in its effect to a light dormant pruning. It is unfortunate that plots of lightly dormant and moderately dormant pruned trees were not included in the original plan of the experiment.

Row of summer pruned trees on left; unpruned trees on right.

However, in spite of the obvious objections to the experiment, it is evident that the results secured indicate very clearly and conclusively that until bearing age is reached at least, light pruning will give a larger and earlier bearing tree. It is natural to suppose, however, that as the trees come into full bearing, with a consequent slowing up of growth, that more severe pruning will have to be given if a sufficient supply of new growth is to be maintained. The recommendation, therefore, is to *shape* the tree only, while young, removing too little wood rather than too much, modifying the treatment as the tree comes into bearing so as to provide for necessary annual growth.

THE STUDY OF THE INTERRELATION OF PRUNING, SOIL FERTILITY, AND DISTANCE OF PLANTING IN THE PEACH.

General Purpose.

To study the pruning of the peach as affected by different distances of planting and varying degrees of soil fertility. To determine the soil fertility and severity of dormant pruning from planting time until bearing age is reached which will induce early bearing and at the same time produce a vigorous mechanically strong, healthy tree, well shaped for convenience and economy in orchard management, capable of producing a succession of profitable crops over a long period of years. To determine, for the bearing orchard, the method of pruning and distance of planting conducive to annual maximum crops of number one fruit, and longevity in the tree. (In determining longevity, length of profitable bearing, freedom from disease, etc., to be considered in addition to such data as weight and quality of annual crops.)

Necessity for Experiment.

The need of an extensive and carefully conducted experiment along the lines indicated is keenly felt by Ontario growers, who agree to disagree as to the proper method of pruning the peach. There is a growing feeling amongst experimental horticulturists, and growers also, throughout America, that orchard trees in general should receive considerably lighter pruning until bearing age is reached than has been advocated heretofore. It has been proven at this Station, at several Experiment Stations in the U. S., and particularly at the Woburn Experiment Station, England, that, for apples heavy pruning not only retards the tree in its development of wood, but also greatly delays bearing.

The correlated problems of distance of planting and soil fertility do not, however, seem to have been taken into serious consideration in these apple pruning experiments. As a matter of fact they probably have not the same significance in the pruning of the apple as they have with the peach, with its ranker growth and totally different bearing habit. The bearing habit of the peach carries with it the necessity of providing for a continuous and ample supply of new wood. Heretofore this object has been accomplished by severe annual thinning out and heading back. May it not be possible to accomplish this same result by giving the trees more room, and allowing them to attain a greater size, stimulating new growth through *moderate* pruning (thinning out mostly) coupled with proper soil fertilization?

Since light pruning while the tree is young allows of a greater tree development, this in turn presupposes the necessity of a greater distance of planting. Pruning, particularly heavy pruning, delays fruiting as already pointed out. Closely planted orchards, whether of peach or other fruits, require comparatively heavy pruning to prevent the trees from crowding. Bearing is then seriously delayed and in spite of the greater number of trees to the acre it is questionable whether such an orchard will produce as big a bulk of fruit as the more widely planted orchard with its earlier bearing, larger, stronger, healthier trees, and possible longer life. Healthier, because it has been observed that heavily pruned peach trees are more susceptible to diseases, particularly the peach canker. Wider planting would also permit of intercropping for a longer time and of easier subsequent culture including picking. It has also been frequently observed that where through accident trees have been allowed more than the usual distance such trees tend to spread out, instead of growing up so high in the air, a greater proportion of the fruit being borne within easy reach of the ground. More sunlight and a freer circulation of air with the wider planting would aid materially in the control of fungus diseases.

An excess of soil fertility promotes excessive growth. As long as there is rapid growth of the tree fruiting will be delayed, for vegetative growth and fruit production are apparently diametrically opposed. One is encouraged at the expense of the other. A slowing up of growth in a too vigorously growing young tree will tend to fruitfulness. This slowing up can be best accomplished by intercropping and thus depleting the soil of some of its fertility, or by allowing the trees to grow without checking by pruning, thus making the trees themselves establish a more moderate soil fertility. It is possible, however, that too unwieldy a tree may be produced in this way, with too much of the fruit so far from the centre of the tree as to induce easy breaking. Many young peach orchards are annually set on old strawberry land and other heavily manured soils. What pruning treatment should such orchards receive?

It will be seen then from the foregoing that the type of pruning must be studied in relation to distance of planting and fertility of the soil. The problems are interdependent and while the effect of varying degrees of pruning is known in a general way, yet there are many pruning problems still to be worked out with the peach. Also the value of experimental work lies a great deal in its practical demonstration. Seeing is believing. California might carry on an experiment similar to this, arrive at the same conclusions, and yet though the results were given to Ontario growers, they would be infinitely slower to profit by these results than if they had been secured in their own province where they could also see the orchard if they so desired.

GENERAL PLAN OF EXPERIMENT.

Only one variety, the Elberta, to be used. It would be desirable to use at least three varieties representing different habits of growth and fruiting, but the area of land is limited. One variety is all that it is possible to use and have sufficient trees in the individual plots to insure reliable results. In three or four years' time if land were available and the importance of the question warranted it, an additional experiment of a variety such as St. John (a different fruiting habit to Elberta) might be set out, embodying such changes in the plan of the experiment as might be suggested from the results being secured in the first experiment.

Carefully selected stock of as nearly uniform vigor and size to be used.

The six acre orchard as a whole to receive uniform commercial treatment in cultivation, spraying and thinning of the fruit, etc., in fact, in all orchard operations excepting the points under comparison, pruning, distance of planting, and soil fertility.

The six acre field to be divided lengthwise into three blocks representing three different degrees of soil fertility as subsequently noted in detail. Crossing these blocks three Elberta orchards to be planted, the distances of planting being respectively 18 ft. by 18 ft., 22 ft. by 22 ft., and 26 ft. by 26 in., the 18 ft. square orchard being the centre one to partially eliminate the necessity for outside check rows. Under each distance of planting six types of pruning to be followed as later noted in detail, each of these types crossing the three soil fertility blocks.

DETAIL PLAN OF EXPERIMENT.

1. SOIL FERTILITY:

Block A. Soil at planting time known to be in poor fertility. No manure or commercial fertilizers to be applied until trees come into bearing. Then to be given treatment as for Block C.

Block B. Check row.

Block C. To receive from time of planting onwards, applications of manure and commercial fertilizers calculated to maintain the soil in as near ideal condition for peaches as possible in the light of present knowledge.

Block D. Check row.

Block E. Extreme applications of manure and commercial fertilizers, particularly the former, during the pre-bearing period or for about three or four years, to be followed by more moderate treatment.

2. DISTANCE OF PLANTING:

Sections 1-5 inc. planted 26 ft. x 26 ft.
Section 6, check, 18 ft. x 18 ft.
Sections 7-11 inc. planted 18 ft. x 18 ft.
Section 12, check, 18 ft. x 18 ft.
Sections 13-17 inc. planted 22 ft. x 22 ft.

3. PRUNING:

All trees to be whipped and headed at planting time at 24 in. All trees (except sections 6 and 12 unpruned) to be trained to three main scaffold branches after first season's growth, these scaffold branches to be headed slightly, or at fifteen to twenty inches from their juncture with the trunk. Subsequent pruning to be as follows:

Type A. Sections 1, 7, 13. Pruned lightly, thinning out only, cutting back when practiced being to lateral branches, not to buds.

Type B. Sections 2, 8, 14. Pruned moderately. Thinned and headed moderately. New growth not to be cut back more than one-third.

Type C. Sections 3, 9, 15. Pruned severely. Thinned and headed severely as ordinarily advocated for the peach. New growth cut back annually one-half to two-thirds.

Type D. Sections 4, 10, 16, pruned as for type A until bearing age is reached. After which type B to be given.

Type E. Sections 5, 11, 17, pruned as for type B until bearing age is reached, after which type C to be given.

Type F. Sections 6, 12. No pruning, excepting the removal of dead or broken branches (simply to observe and study the natural growing habit of the peach).

NOTE.—The term "thinning out" means either the removal of an entire branch, or cutting back to a lateral branch. "Heading back" is any pruning which leaves a stub, no matter how old the wood, but ordinarily refers to cutting back the new wood to a bud.

TABULATION OF DATA:

1. Diameter of the trunk to be taken at time of planting and annually thereafter at the end of each season's growth. Measurements to be made 6 in. below lowest permanent scaffold branch.
2. Measurement to be made annually for as long as possible of the season's total linear twig growth.
3. Diameter of spread of branches to be taken annually after the season's growth and before pruning.
4. Height of tree to be taken as for diameter.
5. Weight of wood removed in pruning to be recorded in pounds for each tree.
6. The cost of pruning for the different plots to be recorded in hours of work.
7. Record to be made of the blooming date and date of maturity of fruit for the different plots.
8. Weight and grades of fruit from each plot, including relative size and color of fruit.
9. Observations to be made on the comparative hardiness of bud and wood under the different treatments if any differences are discernable after test winters.
10. Special note to be made of the relative strength of framework of the trees under the various pruning systems as evidenced by their ability to carry heavy crops without breaking.
11. Accurate record to be kept in hours of the cost of thinning the fruit in the various plots.

NOTE.—Soil fertility blocks to be designated by the letters A to E. Pruning sections to be numbered 1 to 17. Individual or unit plots will therefore be designated A 1, A 2, B 1, B 2, etc.

ESTIMATED TIME TO COMPLETE.

Data should be available at the end of five years as to the degree of pruning and soil fertility best suited to the young peach orchard. From that time on there should be a constant accumulation of data with respect to the best system of pruning to follow for the bearing orchard. At twenty years it is estimated that the closely planted orchard will pass out of profitable existence. This should normally complete the experiment though it will likely be advisable to retain the widely planted trees to determine their limit of profitable bearing.

STUDY OF THE EFFECT OF VARYING DEGREES OF DORMANT PRUNING ON THE DEVELOPMENT OF THE APPLE.

GENERAL PURPOSE.

To determine the degree of dormant pruning which will give the nearest approach to the ideal as determined by the cost of pruning, strength and desirability of framework, general health of the tree, earliness of bearing, commercial value of the crop, and longevity of the tree.

NECESSITY FOR THE EXPERIMENT.

The need for a carefully carried out, long time pruning experiment in apples has been increasing and it is for this reason that the following has been outlined to try and ascertain, if possible, which type of pruning will give the most economical and at the same time the most efficient returns, for the practical orchardist. The present experiment in Section 7 of the Experiment Station grounds, on Winter pruning vs. Summer pruning vs. no pruning, indicates that we have been pruning our young trees too severely, but does not establish the degree of dormant pruning which should be given until bearing age or after.

PLAN OF EXPERIMENT.

The orchard to consist of five varieties, McIntosh, Spy, and Baldwin, as standard, and Wealthy and Duchess, as fillers. These varieties represent five somewhat different types of growth which are fairly typical of a great many other orchard varieties in tree character and should therefore show for other varieties the effect of varying degrees of pruning. These varieties normally come into bearing at different ages which will allow a better basis for determining the relation of type and severity of pruning to the hastening of bearing. They mature their fruit over a long period so that the picking and ripening time of one variety will not interfere with that of another in the taking of notes, etc. Lastly, they are among the leading commercial varieties of to-day.

This experiment is to start with the planting of the orchard on the Victoria Farm where the soil is of as uniform a nature as it is possible to get and is such that any differences resulting will be mainly due to pruning and not to soil variations. All trees are to be as nearly equal in every respect as possible at planting time and to be cut back when planted in the usual manner leaving 3 to 5 well spaced branches for a head. This head to be 24 to 30 inches from the ground or as close to that as the nursery stock will allow.

The distances of planting are to be as follows: standards 39 ft. apart with the fillers 19½ ft. apart thus allowing 162 standard trees and 433 fillers in the experiment with a check row around the outside of the orchard.

Pruning is to vary from heavy annual pruning through varying degrees until there is no pruning whatever unless to remove broken limbs, and is to be laid out as follows:

Block 1. Rows 1-8. Containing 12 McIntosh, 12 Baldwin, 12 Spy, 50 Wealthy and 50 Duchess trees, is to receive light annual dormant pruning, just sufficient to keep the tree in fair shape, removing cross limbs, etc., but is to receive no cutting back except when trees are set. Too much wood is to be left rather than too little, i.e., too much wood for a permanent framework.

Block 2. Rows 9-16. Containing 12 McIntosh, 12 Baldwin, 12 Spy, 50 Wealthy and 50 Duchess, is to receive moderate annual dormant pruning, but as in Block 1, no cutting back.

Block 3. Rows 17-23. Containing 12 McIntosh, 12 Baldwin, 12 Spy, 41 Wealthy, 42 Duchess, is to receive heavy annual pruning, including cutting back. In other words, the method which is commonly practised in the Province is to followed.

Block 4. Rows 24-27. Containing 6 McIntosh, 6 Baldwin, 6 Spy, 25 Wealthy and 25 Duchess trees, is to receive no pruning at all unless to cut out a broken or diseased part.

Block 5. Rows 28-31. Containing 6 McIntosh, 6 Baldwin, 6 Spy, 25 Wealthy and 25 Duchess trees, is to receive the same treatment as Block 4 until five or six crops have been harvested. Then pruning is to be given to bring the trees back into desirable shape, taking three or four years to do this so as not to upset the equilibrium of the trees. Pruning thereafter is to be such as will maintain the trees in a healthy fruiting condition.

Block 6. Rows 32-35. Containing 6 McIntosh, 6 Baldwin, 6 Spy, 25 Wealthy and 25 Duchess, is to receive the same treatment as Blocks 4 and 5 until after the first crop has been borne, when pruning is to be begun to bring the trees back to a desirable shape in about three years. Pruning thereafter is to be such as will maintain the trees in a healthy fruiting condition.

TABULATION OF DATA.

(1) Diameter of Trunk. To be taken annually one foot below the lowest permanent branch (if this branch should for any reason be removed, continue to measure one foot below the point from which it was removed).

(2) Linear measurements of annual twig growth of every tree in the various blocks to be taken for as long as possible. As this becomes too arduous a task for the whole orchard, continue as long as possible with the standards.

(3) Account to be kept of all the time spent in the actual pruning of each block.

(4) Wood removed in pruning from each tree to be weighed and recorded.

(5) Blooming season. Record date of full bloom each year.

(6) Amount of bloom. For as long as possible actual counts to be taken of the number of blossom clusters. When this becomes impracticable, estimate the amount of bloom, grading from 0 to 10, 10 being for a full bloom.

(7) Fruiting season, dates of picking.

(8) Amount of fruit per tree in pounds.

(9) The fruit of each variety in each block to be graded according to size and color in accordance with the Fruit Marks Act and record made of number and weight in each grade. Note also any differences in color of fruit from the different pruning blocks.

(10) In five year periods gather all data and work up the records to date. At the end of such periods, to complete this data, get the width and height of each tree in the experiment.

ESTIMATED TIME TO COMPLETE.

To be reliable this experiment should run at least twenty-five years to determine earliness of bearing and fruitfulness, and indefinitely longer to determine the longevity of the varieties under the different systems of pruning if this is thought advisable at that time and depending upon conditions then existing. The filler varieties would of course have to be removed early and would therefore not figure in this part of the experiment.

CULTURAL NOTES.

Excepting for the pruning all blocks are to be treated exactly alike. Trees as uniform as possible, within a variety, to be chosen. These to be planted in the usual approved manner paying particular attention to the head, selecting from 3 to 5 well placed limbs. This in regards to the non-pruned and lightly pruned blocks is of especial importance. Cultivation is to be the same throughout and is to be done as regularly and thoroughly as weather permits. The kind of cover crop will depend largely on the need of the orchard whether it is simply humus or nitrogen as well that is needed. In this regard it is absolutely essential that all blocks should receive exactly the same treatment.

THINNING OF FRUIT.

Thinning is to be conducted throughout the whole of the experiment as part of the general orchard practices and is to be done at the proper season any year the trees require it.

VARIETY TESTS OF PLUMS.

The following table gives the date of planting, date of first fruit, total crop, number of crops, and the earliest and latest dates of picking for the varieties of plums in the variety test orchard. Generally, there are only two trees of each variety so that the yields given should be taken as only indicating the producing ability of the variety. The date of first fruit, however, gives a very fair idea of the age at which the variety comes into bearing. Similarly, the dates of picking give the range of season of the variety. The first date given is for the season in which the fruit matured earliest, and the latter date, the latest the fruit has been in maturing due to lateness in the season. In the column "Total Crop in Pounds," the total individual yield of each tree of the particular variety is given. For example, there are two trees of America, one of which has given a total yield to date of 277.5 lbs., and the other 238.75 lbs.

TABLE VI.—PLUMS, RECORDS FROM VARIETY TESTS.

Variety	Year planted	Year Fruited first	No. Trees	Total Crop in Pounds	No. Crops	Dates of Picking	
						Earliest	Latest
America	1908	1913	2	277.5	6	Aug. 16	Sept. 10
				238.75	6		
Ancaster	1908	1914	2	174.	6	" 14	" 8
				142.5	6		
Apple	1908	1913	2	142.	7	" 21	" 12
				179.4	7		
Arch Duke	1908	1913	2	334.	6	Sept. 4	" 27
				347.	6		
"	1908	1915	1	185.5	5	" 4	" 27
"	1910	1915	1	237.5	5	" 4	" 27
Bartlett	1908	1913	2	59.15	7	Aug. 16	" 10
		1912	......	112.9	8		
Beauty of Naples	1910	1915	2	65.	4	" 22	" 19
" "	1908	1912	......	286.50	5		
" "	1908	1916	1	279.5	4	" 23	" 19
Belle de Louvaine	1909	....	2	....	......		
		1917		.1	1	Sept. 14	....
Belle de Paris	1909	1916	2	85.	4	Aug. 4	Aug. 28
				138.	4		
Belle de Septembre	1909	1913	2	18.	6	Sept. 23	Oct. 10
				13.25	5		
Belgian Purple	1909	1914	2	94.5	6	Aug. 19	Sept. 10
				106.5	6		
Bleekers Gage	1908	1912	2	169.	7	" 30	" 25
		1913	......	219.5	5		
Blue Prolific	1908	1912	1	180.5	7	" 15	" 15
Bradshaw	1909	1918	2	7.	2	" 15	" 12
		1915	......	6.5	5		
"	1908	1916	2	37.	3	" 15	" 12
				32.	4		
"	1908	1918	2	22.	2	" 15	" 12
		1916	......	39.1	3		
Burbank	1908	1912	2	387.5	8	Aug. 22	" 15
				344.8	8		
Canada Orleans	1908	1913	2	109.7	5	" 22	" 19
				114.	5		
Chabot	1908	1913	2	96.	5	Sept. 6	" 17
		1912	......	71.7	6		
Climax	1908	1913	2	193.25	7	Aug. 11	" 9
				187.75	7		
Clyman	1908	1915	2	160.5	5	" 7	" 10
				107.	5		
Columbia	1908	1915	1	187.	5	" 28	" 29
Coe's Golden Drop	1908	1912	2	270.5	7	Sept. 10	Oct. 4
				184.	7		
"	1908	1913	1	227.5	4	" 19	" 4
Curlew	1909	1915	2	62.5	5	Aug. 22	Sept. 19
		1913	......	95.75	6		
Czar	1908	1914	2	92.5	6	" 7	Aug. 28
		1915	......	65.	5		
Daisy (?)	1909	1914	2	83.	6	" 14	Sept. 6
				186.	6		
Denbigh	1909	1913	2	48.5	6	" 27	" 17
				78.	6		
Diamond	1908	1913	2	296.	6	" 30	" 25
				338.75	6		
Duane Purple	1908	1912–13	12	3402.74	3–8 3–7 5–6 1–4	" 29	" 19
Earliest of All	1908	1913	2	158.	6	July 24	Aug. 8
				110.5	6		
"	1912	1916	1	22.1	4	" 24	" 8

TABLE VI.—PLUMS, RECORDS FROM VARIETY TESTS.—*Continued.*

Variety	Year planted	Year Fruited First	No. Trees	Total Crop in Pounds	No. Crops	Dates of Picking	
						Earliest	Latest
Early Rivers	1908	1915	2	132.	5	Aug. 7....	Aug. 27
		1916	......	84.	4		
Early Transparent Gage	1908	1915	2	8.5	5	" 20....	Sept. 17
				41.5	5		
Emerald (Domestica)	1908	1914	1	65.4	5	Aug. 7....	Sept. 10
Fellenburg	1908	1916	2	90.5	4	Sept. 6....	" 25
				149.	4		
"	1908	1916	2	193.	4	" 6....	" 25
				196.	4		
"	1908	1916	2	128.	4	" 9....	" 25
				61.	4		
Femmonizie	1909	1916	2	5.5	2	Aug. 14....	" 12
				9.5	3		
Field	1908	1913	2	237.	6	" 14....	" 10
				204.5	6		
French Damson	1908	1916	1	70.	3	Sept. 8....	Oct. 10
Gavotia	1911	1913	2	97.75	4	Aug. 3....	Sept. 15
	1908	....	......	107.25	5		
General Hand (9)	1908	1913–16	12	1267.5	4–5	" 27....	Oct. 2
(3)	1910	....	......	....	7–4		
					1–3		
German Prune (?)	1908	1912	2	177.	7	" 26....	" 13
				178.	6		
Gisborne	1909	1913	2	53.5	6	" 14....	Sept. 6
				35.25	6		
Glass Seedling	1908	1913	2	149.5	5	" 28....	" 28
				55.5	5		
Goliath	1909	1916	2	417.5	4	" 27....	" 19
				128.5	4		
Grand Duke	1908	1912	2	233.5	7	Sept. 8....	Oct. 10
				165.5	7		
Gueii (11)	1908	1913	12	1642.87	1–7	Aug. 15....	Sept. 19
(1)	1910	....	......	....	3–6		
					7–5		
					1–4		
Hawkeye	1913	1916	1	20.5	4	Sept. 12....	Oct. 3
Hudson	1908	1913	2	249.25	6	Aug. 27....	Sept. 25
				224.	6		
Hurling's Superb	1908	1913	2	269.	6	Sept. 4....	" 25
				214.75	5		
Hunt	1908	1912	1	31.00	5	Aug. 27....	Oct. 3
Ickworth	1908	1917	1	53.5	3	Sept. 23....	" 22
Imperial Gage	1908	1914	2	232.75	6	Aug. 21....	Sept. 17
				172.25	6		
Imperial Peach	1908	1912	2	299.35	8	" 21....	" 14
				252.9	8		
Improved Agen	1909	....	2	....	......		
Improved Lombard	1912	1917	2	14.5	3	Sept. 2....	" 25
				12.5	3		
John A	1908	1913	1	110.5	6	" 9....	Oct. 11
Kelsey	1908	1913	2	172.85	6	Aug. 22....	Sept. 12
		1912	......	148.25	8		
Kingston	1908	1913	2	239.	7	" 9....	" 28
				246.	7		
King of the Damsons	1908	1913	2	149.2	6	(in tent 1913	one year)
				131.5	7	Sept. 9....	Oct. 2
" "	1908	1913	1	103.	6	" 5....	" 1
Klondyke	1908	1913	2	125.75	6	" 8....	" 24
				130.5	6		
Large Golden Prolific	1908	1913	2	220.15	7	Aug. 21....	Sept. 25
				163.25	7		
Latchford	1908	1913	2	113.	5	Sept. 2....	Oct. 10
				186.5	5		

TABLE VI.—PLUMS, RECORDS FROM VARIETY TESTS.—*Continued.*

Variety	Year Planted	Year Fruited First	No. Trees	Total Crop in Pounds	No. Crops	Dates of Picking	
						Earliest	Latest
Lawson	1908	1916	2	74.	4	Aug. 14	Sept. 27
				14.1	4		
Lombard (9)	1908	1913–16	12	3192.	8–6	Sept. 2	" 29
(3)	1910	....	......	....	3–5	(1 in tent)	
					1–4		
Lowry Gage	1908	1913	2	231.3	6	Aug. 15	" 10
				208.5	6		
Lowry Gage	1908	1913	2	119.25	7	Aug. 15	Sept. 7
				191.3	7		
Mallard	1908	1913	2	121.5	7	" 20	" 24
				90.7	7		
"	1908	1913	2	198.5	7	" 20	" 24
				175.	7		
Mary	1908	1912	2	249.5	8	" 8	" 19
				218.75	8		
Matthew	1912	1915	1	11.5	5	" 31	" 12
Maynard	1912	1915	2	54.	4	" 8	" 10
				40.5	5		
Magnum Bonum	1908	1916	2	25.	4	" 27	" 19
				65.4	4		
McLaughlin	1908	1912	2	138.75	8	" 21	" 17
				235.25	8		
Monarch	1908	1913	1	213.5	6	Sept. 6	Oct. 3
Moore	1908	1913	1	293.1	6	Aug. 21	Sept. 21
Moyer	1908	1913	2	163.25	6	" 22	" 17
				198.	5		
October Purple	1908	1912	1	39.	6	Sept. 9	Oct. 4
Omaha	1912	1916	3	10.5	4	Sept. 10	Sept. 29
				8.	2		
				29.25	4		
Oriental	1908	1913	2	176.75	6	Aug. 16	" 15
				185.	6		
Pacific	1909	1913	2	28.45	4	Sept. 2	Oct. 1
				13.6	4		
Pearl	1909	1916	2	9.5	3	Aug. 27	Sept. 19
				8.5	4		
"	1908	1913	2	100.3	7	" 27	" 19
		1912	......	127.7	7		
Peters Yellow Gage	1908	1912	2	155.4	7	" 27	" 27
		1913	......	124.5	6		
Pond's Seedling (11)	1908	1912–15	12	1302.5	2–7	Sept. 2	" 27
(1)	1910	....	......	....	6–6		
					3–5		
					1–4		
Poole Pride	1909	1914	1	486.2	6	Aug. 22	" 25
Prunus Simonii	1908	1914	2	8.5	3	" 21	Aug. 31
				10.1	4		
Quackenboss	1910	1916	2	16.	3	" 27	Oct. 1
	1908	....	......	34.5	3		
Raynes	1908	1913	2	219.	6	" 22	Sept. 25
				185.4	6		
Red June	1908	1913	2	140.	7	" 4	" 10
				149.5	7		
Reine Claude	1908	1913	12	2910.	10–6	Sept. 10	Oct. 2
					1–5		
					1–4		
Reine Claude de Gabriel Coombes	1909	1916	2	66.5	3	" 23	" 7
		1915	......	93.5	4		
Riley Damson	1909	1914	2	104.	6	Aug. 9	Sept. 23
				103.	6		
Robes de Sergeant	1909	1915	2	185.5	5	" 27	" 25
				152.	5		
Rockport	1908	1914	2	29.3	5	" 30	" 29
				67.	5		

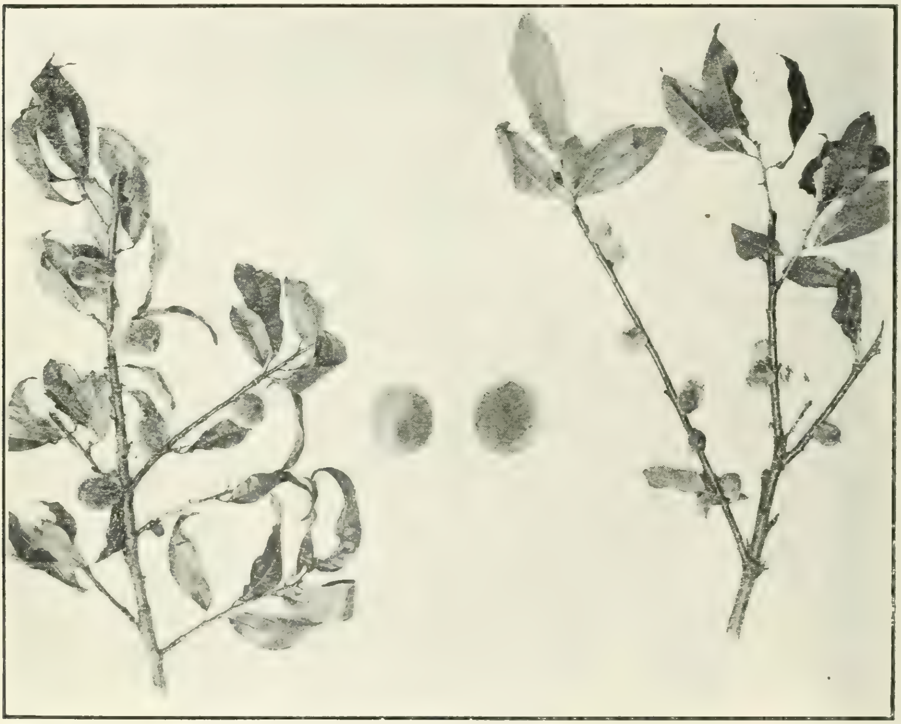
TABLE VI.—PLUMS, RECORDS FROM VARIETY TESTS.—*Continued.*

Variety	Date Planted	Date Fruited First	No. of Trees	Total Crop in Pounds	No. Crops	Dates of Picking	
						Earliest	Latest
Santa Rosa..................	1908	1914	2	86.	6	Aug. 14....	Sept. 10
				72.25	6		
Saratoga....................	1910	1916	1	160.5	4	Sept. 9....	" 25
Satsuma.....................	1908	1913	2	5.	1	" 9	
				13.75	1		
Saunders....................	1908	1913	2	113.25	7	Aug. 10....	" 9
				172.7	7		
Shiro.......................	1908	1915	2	375.25	7	" 7....	" 10
				500.75	7		
Shipper's Pride.............	1908	1916	2	61.5	4	Sept. 2....	Sept. 27
				40.	4		
Shropshire Damson...........	1908	1915	2	102.	5	" 3....	Oct. 2
	1910	....	......	81.	5		
" "	1908	1913	2	171.5	6	" 4....	" 2
				121.5	5		
Silver......................	1909	1913	2	153.5	4	" 19....	" 4
				151.6	5		
Smith's Orleans.............	1908	1913	2	90.	7	Aug. 22....	Sept. 25
				79.	7		
Splendor....................	1909	1916	2	19.6	4	" 22....	" 24
				25.3	4		
Stanton.....................	1908	1915	2	176.	5	Sept. 22....	Oct. 10
		1916	......	131.	4		
Stella......................	1909	1914	2	35.7	6	Aug. 30....	Sept. 28
				45.5	6		
Sugar Prune.................	1909	1913	2	28.45	5	" 23....	" 25
				13.6	4		
Sultan......................	1909	1913	2	25.5	5	" 7....	Aug. 30
	1908	....	......	42.25	5		
Sutton......................	1908	1913	2	107.75	7	" 21....	Sept. 12
				111.5	7		
Thanksgiving Prune..........	1908	1916	2	95.	4	Sept. 10....	Oct. 11
				69.	4		
Uncle Ben...................	1909	1915	1	104.5	4	" 10....	" 11
Victoria....................	1908	1912	2	220.8	7	" 2....	Sept. 27
				198.5	7		
Washington (10).............	1908	1915	11	1821.	8–6	Aug. 22....	Sept. 19
(1)..............	1910	....	......	....	3–5		
Warner's Late...............	1908	1915	2	177.	5	Sept. 18....	Oct. 10
		1913	......	188.5	5		
Willard.....................	1908	1914	2	90.5	5	Aug. 6....	Aug. 20
				147.25	5		
World Beater................	1909	1916	2	13.	4	Sept. 23....	Oct. 22
				43.85	4		
Wyedale.....................	1909	1915	2	55.75	5	" 9....	" 10
				62.5	5		
Yellow Egg..................	1909	1915	2	79.5	5	Aug. 22....	Sept. 27
				145.7	5		
Yellow Egg..................	1908	1912–13	11	2089.8	3–8	" 26....	" 27
					5–7		
					2–6		
					1–5	in tent	

MISCELLANEOUS POMOLOGICAL NOTES.

Peach Variety Tests.

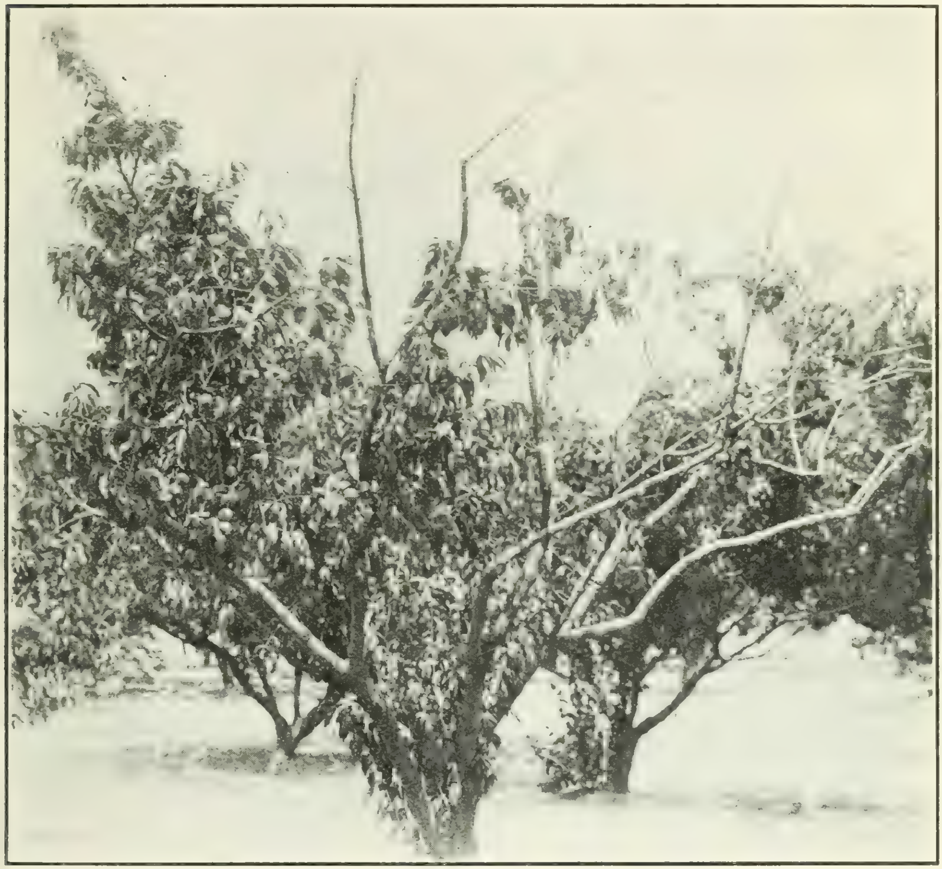
The season of 1919, as a whole, was not a good peach season. Considering all varieties, there was little more than half a crop. Some varieties, however, such as Admiral Dewey, Greensboro, Leamington, and Connetts, which are good annual bearers, proved themselves again prolific producers under the same adverse conditions which materially reduced the size of the crop of other varieties. Ripening commenced with Mayflower, the first fruit being gathered on July 19th and the whole crop on July 22nd. Alexander followed on August 1st with Greensboro and Arp Beauty, August 8th, and Admiral Dewey a day or two later.



Fruits of St. John (left) and Brigdon peaches (right) which hung on the tree until after picking time in an undeveloped state. The two fruits in the centre are normal size Elbertas.

The phenomenon observed to some extent in other seasons but perhaps not to so marked an extent as in 1919, was that many fruits of the St. John and Brigdon varieties were noticed hanging on to the trees until frost, in a very small and undeveloped state being of the size that usually falls during the June drop. The same thing was noticed on the varieties Richmond, Billmeyer and Early Crawford, but to a lesser extent (all Crawford type). Had these properly developed, there would have been a bumper crop of the two varieties St. John and Brigdon. From breeding experience and general observation, it is thought that these undeveloped fruits are due to improper pollination and that the tree is able to retain these unpollinated fruits, which ordinarily fall in June, owing to there being only a few properly developed fruits on the tree. During August and September after a considerable amount of rain had fallen, these undeveloped fruits swelled up slightly, and the flesh ripened at about the proper season for the variety. The pits were hard but contained no seed.

Our experience also leads to the belief that peaches are almost entirely self-pollinated. There are indications that the pollen of St. John and Brigdon is impotent to a considerable degree varying probably with the season. This impotence of pollen may be largely responsible for the shy bearing qualities of the varieties of peaches of the Crawford type.



Arp Beauty peach showing susceptibility to winter injury.

The accompanying illustration shows branches of these undeveloped fruits taken three weeks after the St. John (normal fruit) had been picked. The branch on the right is Brigdon and that on the left St. John, the two fruits in the centre being Elbertas of average size.

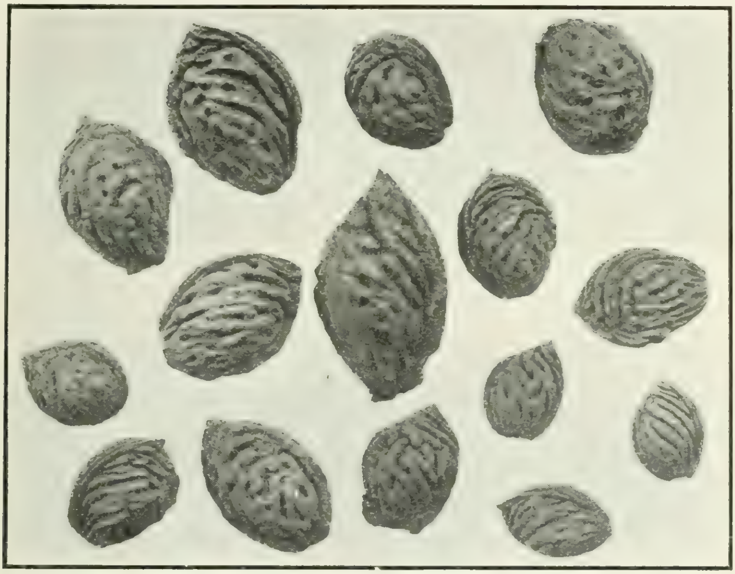
The Arp Beauty, the earliest yellow fleshed peach of merit from the standpoint of quality of fruit, has proven itself a highly desirable, early fruit except for its one great fault of being tender in wood. The Arp Beauty is reported as being hardy in the bud at the New York State Experiment Station, but we cannot say the same for the variety under our conditions as is evident from the accompanying illustration. In spite of its tenderness, however, if the whole life of the trees under test be taken into consideration, it compares very favorably with other varieties in the matter of yield. Out of fifteen varieties tabulated, the Arp Beauty stands fifth with an annual average production of 73 lbs. per tree.

Mention should be made of the Connetts variety, not to recommend it for general planting, but simply to point out some of its outstanding merits. Over a series of years, it has yielded 44 lbs. per tree per annum *more* than any other commercial variety of importance in the orchard. The tree is hardy and vigorous and the fruit very large, oval, *white-fleshed,* stringy, sweet and bruises easily.

From noting individual trees that have had more than the allotted 20 ft. square of space developing into large spreading trees of great mechanical strength, the idea has gained ground that the general practice has been to plant peach trees too closely. Observations in many commercial peach orchards bear out this assumption. The accompanying illustration shows a tree which has had sufficient room on all sides to develop normally.

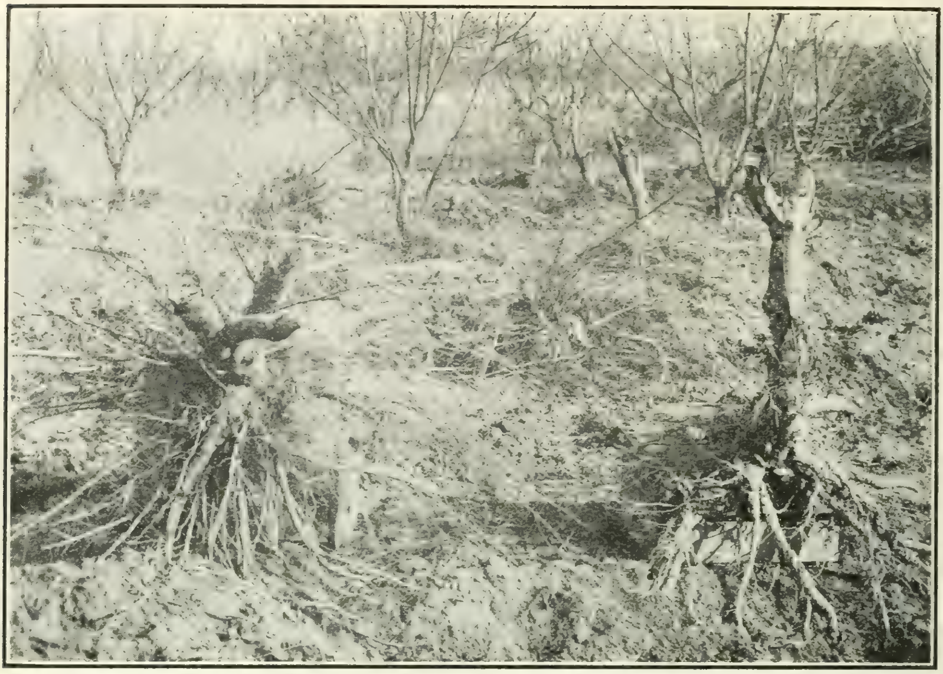
A peach tree which has had sufficient room on all sides to spread out and develop normally.

In the peach variety test orchard, accurate records of yields have been kept covering the entire bearing period of the orchard to date. Trees on clay soil have invariably given the lowest average yields, but the most striking point observable in the records is the wide range between different trees of the same variety. Some trees on the average have produced twice as much as others of the same variety under like conditions. These averages have considerable significance as they cover a period of eight years' bearing. The problem arises as to the cause for these differences. No doubt some of it may be due to improper pruning. Still another cause may be the total breaking down of main limbs by wind, which are overloaded with fruit, or by accident, or by careless cultivation. It is surmised, however, that most of the difference is due to differences in root stock. Casual study of these differences in yield would lead many to ascribe the differences in yield to bud variation. As intimated above, however, we are of the opinion that variation in root stock is the main cause, and that bud variation has little, if any, effect. Many trees in this orchard were removed in the fall of 1919, when a close observation of the root system of different trees revealed very considerable variations. In the breeding work, it has been noted that in growing large numbers of seedlings from commercial varieties, there is considerable variation in size and in vigor in the young trees. It was also found that during the severe winter of 1918-19, more of the smaller seedlings out of a total of 4,000 succumbed to weather conditions than did the larger trees, thus indicating a weaker constitution. Had all of these trees been named varieties, it is obvious that the new tops would be influenced by the weaker root. The stumps that have been cut down in the old orchard vary considerably in diameter among those planted the same year, and the roots vary in number and the difficulty of getting them out of the ground.

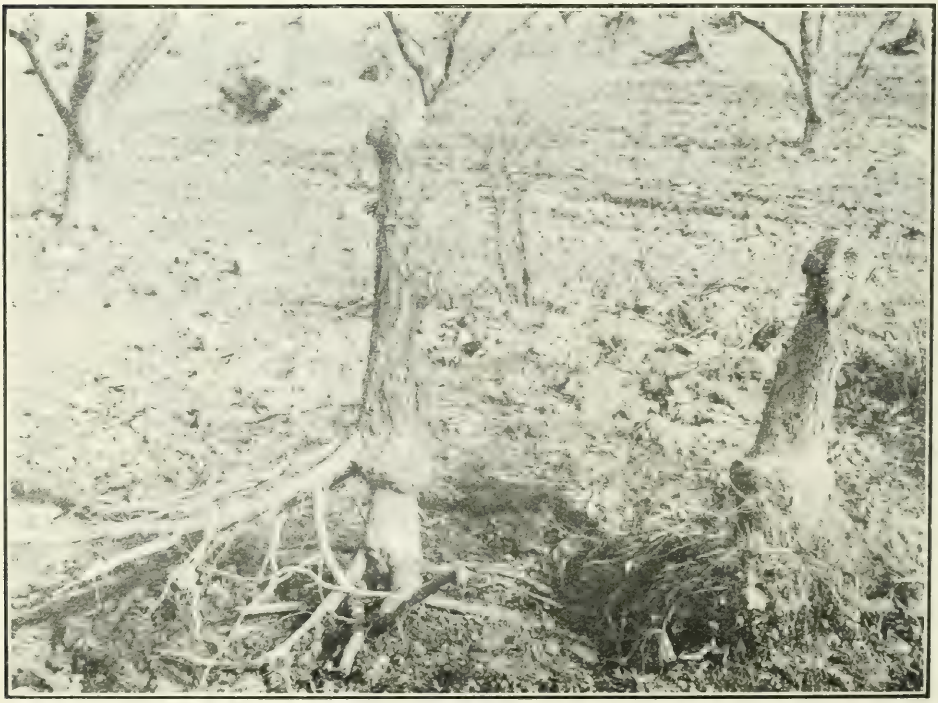


Random sample of peach pits secured from North Carolina for propagation purposes.

The general nursery practice for stocks for peach budding is to secure what are called the natural wild pits from Tennessee or Carolina. These pits vary in size and resulting young trees also vary in vigor and growth hence it would be expected that the buds which are inserted on this stock would also vary correspondingly. The accompanying illustration shows pits as they were received from a nursery firm in North Carolina. This firm supplies similar pits to our northern nurseries who use them for propagating stock and such pits form the foundation of our commercial peach plantings. The group of pits illustrated is simply a



Types of peach roots



Types of peach roots.

random sample of about the proportion of the varying sizes as taken from a half bushel lot.

Differences in type of root and number of roots will also be easily observed in the accompanying illustrations. Some of these differences illustrated are due to differences in soil, but other differences cannot be attributed to this cause.

The accompanying chart gives a summary of individual tree averages of fifteen representative varieties of peaches. The differences in yield between different trees of the same variety are easily apparent.

PLUM VARIETY TESTS.

Similar differences in yield between different trees of the same variety have been noticed in the variety plum orchard. In eleven trees of Duane Purple, for example, total yields for eight seasons vary from 241 lbs. for one tree to 401 lbs. for another; in General Hand, from 37 lbs. to 211 lbs.; in Gueii, from 32 lbs. to 201 lbs.; in Lombard, from 224 lbs. to 403 lbs.; in Pond Seedling, from 43 lbs. to 140 lbs.; in Reine Claude, from 90 lbs. to 310 lbs.; in Washington, from 125 lbs. to 209 lbs., and in Yellow Egg from 136 lbs. to 290 lbs. These differences are between trees of the same age and under as uniform conditions of soil as can be secured under ordinary orchard conditions. The above yields are, of course, for the lowest producing and highest producing trees out of a total of twelve trees of each variety.

Synopsis of individual tree averages of 15 representative varieties of Peaches

Variety	Number of Trees	Number of trees with an annual average of lbs per Tree																										
		0 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 to 100	100 to 105	105 to 110	110 to 115	115 to 120	120 to 125	125 to 130	130 to 135
Arp Beauty	2												1		1													
Brigdon	24		1	1	7	8	2	2	2	1																		
Connetts	2																									1		1
Crawford Early	7	2	1	2				1		1																		
Dewey	17								1	1			1	1	1	1		4	3	2	1				1			
Elberta	23				1	2	2	2			4	1	2	6		1		2										
Engles Mammoth	24							1	5	1	3	2	3	4	4	1												
Greensboro	2																	2										
Leamington	2																	1		1								
Mayflower	4						2		1	1																		
Mountain Rose	19			1	2	4	5	1	2	1	1	1	1															
New Prolific	20								2		3	4	1	2	1	3	1			1			2					
Reeves Favorite	17	11	4	1	1																							
St John	23	1		2	2	3	3	5	3	3	1																	
Smock	24		3	6	3	2	8	1		1																		

APPLE VARIETY TESTS.

As the apple variety orchard comes into bearing, some surprises are forthcoming. The row of Red Canada is producing Yellow Bellflowers; Lowell turns out to be Stark; Powers Large Red is producing McIntosh; Van Wyck and Mother are Haas and Cayuga respectively. Generally, however, varieties are proving true to name.

VEGETABLE EXPERIMENTS

A complete outline of the work with vegetables has been given in the past reports of the Station. In the 1918 Report, the various projects under way and those discontinued or completed are listed by title.

In this report further results are given for the test of Northern vs. Southern grown potatoes for seed purposes, and the results of the first year's test of various varieties of tomatoes for earliness and yield.

NORTHERN VS. SOUTHERN ONTARIO GROWN POTATOES AS SEED TUBERS.

The following table gives the results for the season of 1919:

TABLE VII.—POTATOES.—NORTHERN SEED *vs.* SOUTHERN SEED.

Variety	Source	No. of Hills	Lbs. of Tubers Market-able	Lbs. of Small	Lbs. per Hill	Bus. per Acre
Irish Cobbler.....	1 year in North	30	19	5	.63	101.6
Irish Cobbler.....	1 year in South	25	15	6	.60	96.8
Irish Cobbler.....	Immature small seed, South (G. Clark)	25	16	4.5	.64	103.2
Irish Cobbler.....	Immature large seed, South (G. Clark)	30	29.5	3	.98	158.1
Green Mountain ..	1 year in South	25	27.5	6.5	1.10	177.4
Green Mountain ..	1 year in North	25	34	9	1.36	219.4
Green Mountain ..	Immature, South (W. S. Eborall)	25	30	9	1.20	193.6

Northern Cobbler seed gave a gain of only 4.8 bus. per acre over ordinary Southern seed. In other seasons' tests, the difference has been more marked.

Southern seed (Cobbler) grown late and thus immature gave a gain of 56.5 bus. per acre over Northern seed and a gain of 62 bus. per acre over ordinary Southern seed. In this case it may possible be that the Northern grown seed was from an inferior strain.

Northern Green Mountain seed gave a gain of 42 bus. per acre over ordinary Southern seed and a gain of 25.8 bus. per acre over the immature Southern seed.

Since the year 1916 Northern seed of Irish Cobbler has given increased yields every season over ordinary Southern seed. But in 1919 two lots of immature Cobbler seed from Southern Ontario were used and both of these gave a gain over the Northern seed. This point is interesting and will be tested further if possible. Leaving out this part of the experiment and striking an average for the four years we find that the Northern Cobbler seed has an average gain over Southern seed of 47 bus. per acre.

The highest gain for any season due to Northern seed was 91 bus. per acre produced in 1916. The increase produced in 1919 of 4.8 bus. is by far the lowest since work was started on this experiment.

It will be noticed that Northern Green Mountain has given substantial gains per acre over the ordinary Southern seed as well as over the immature seed, being 42 bus. and 25.8 bus. per acre, respectively.

TOMATO VARIETY TESTS.

Some sixty selections of various standard varieties and twenty hybrids received from the Horticultural Department at Guelph, were grown. This experiment was planned and carried out not simply to compare different varieties and plants of the same variety from different seed sources, but rather as a preliminary to breeding work. In the breeding work two things are being worked for; first, an early tomato of good type for market purposes and second, a tomato primarily for canning factory purposes. Therefore, seed of all likely varieties was secured and in many cases seed of the same variety from different seedsmen. We wished to discover the best variety and the best strain within a variety at present existing with which to begin the breeding work.

The necessity for such preliminary testing of existing strains of varieties is clearly shown in the accompanying table. For example, seed of Bonny Best from eight different sources was secured and grown. The *early* yield of these different selections, i.e., the yield from the beginning of the season up until August 16th, varied from .13 lbs. per plant to .81 lbs., or in other words, one selection produced six times as much early fruit as the other. Similarly, the total yield for the season for these eight selections of Bonny Best varies from a little over 17 lbs. to practically 26½ lbs. per plant. Calculated on an acre basis this means that the heaviest yielding strain of Bonny Best outyielded the lightest yielding strain at the rate of over 260 bus. per acre. In the next to last column is given the per cent. of green fruit at the end of the season. Green fruit was picked and weighed and is included in the total yield. Using the variety Bonny Best to illustrate again it will be seen from the table that the per cent. of green fruit varies from 7.2 per cent. to 13.1. It happens that the heaviest yielding strain of Bonny Best also matured a greater per cent. of its fruit before frost and had, as noted above, only 7.2 per cent. of green fruit at the end of the season. Heavy yielding, early maturing selections of varieties such as these should be of considerable value to the commercial grower, as well as offering the best possible start for further breeding work.

A study of the following tables will show similar data in strains of Earliana, John Baer, etc. Varieties which yielded two pounds or more per plant before August 16th are marked with an asterisk.

TABLE VIII.—TOMATO VARIETY TESTS.

Variety	Source of Seed	No. of Plants	Weight in Lbs. of early pickings							Average per plant, July 20–Aug. 16	Average per plant, Aug. 17–Sept. 20	Average per plant, Sept. 21–Oct. 13	Average per plant for season	Per cent. of green fruit	Relative standing in yield
			July		August										
			28	31	4	6	8	13	16						
*Alacrity	C.E.F. (A)	20	6.	9.5	5.	3.5	6.5	14	5.5	2.50	9.90	12.20	24.60	10.4	26
*Alacrity	H.E.S. (1915)	19	3.	9.5	12.	9.5	6.5	12.	7.	3.13	10.05	11.73	24.91	8.8	9
*Alacrity	H.E.S. (F)	20	5.	7.5	7.	5.	7.5	13.	10.	2.65	9.62	9.35	21.62	8.8	48
*Atlantic Prize	H.E.S. (A)	19	6.	6.5	6.	7.	5.	21.	....	2.70	7.89	10.82	21.41	9.2	51
*Atlantic Prize	H.E.S. (O_2)	19	11.	7.	5.	8.	11.	26.	8.	4.00	4.21	10.16	18.38	14.6	64
Baltimore Baer	Bolgiano	20	....	....	1.	....	1.5	9.	....	.57	15.70	14.47	30.74	6.2	7
*Beauty	H.E.S.	20	....	few	4.	3.5	9.	16.	12.	2.20	15.70	9.40	27.30	10.	13
Bonny Best	Langdon	20	few	....	2.5	3.5	3.5	6.	....	.77	12.22	10.97	23.96	9.6	30
Bonny Best	Stokes	18	few	few	few	2.	few	5.5	....	.42	12.00	14.00	26.42	7.2	17
Bonny Best	Harris	20	....	few	few	2.	3.	4.5	....	.47	11.62	12.22	24.31	9.5	28
Bonny Best	Bolgiano	20	....	....	few	1.5	1.	3.5	....	.30	10.27	13.82	24.39	7.7	27
Bonny Best	H.E.S. (D)	18	....	few	1.	2.	2.	6.	....	.61	6.91	14.14	21.66	13.1	47
Bonny Best	H.E.S. (C)	19	....	few	4.	1.5	4.	6.	....	.81	6.84	9.68	17.33	12.7	65
Bonny Best	O.A.C. (B)	19	....	....	few	few	1.	1.5	....	.13	7.97	12.11	20.21	12.1	56
Bonny Best	O.A.C. (A1)	19	few	....	1.5	1.	1.	3.	....	.34	8.37	13.42	22.13	12.1	42
Bruce's First & Best	H.E.S. (E)	18	....	2.	2.	3.5	2.	10.	....	1.08	15.75	9.86	26.69	8.8	15
Burbank's Early	....	20	2.	few	5.	2.	2.	10.	....	1.05	5.78	11.57	18.40	10.3	63
Chalk's Jewel	Bolgiano	20	....	few	....	2.	2.	....	5.5	.47	11.92	7.67	20.06	6.2	57
Chalk's Jewel	Carters	20	....	....	....	1.	2.	....	2.	.25	11.77	10.00	22.02	6.5	43
Chalk's Jewel	H.E.S. (C)	20	....	....	....	....	....	....	3.	.15	7.25	13.07	20.47	7.0	55
Coreless	Livingston	20	....	....	....	....	....	....	....	....	1.92	21.05	22.97	23.0	37
Coreless	Ferry	18	....	....	....	....	....	....	....	....	4.39	18.00	22.39	21.0	41
Earliana	Stokes	19	....	few	3.	2.	2.5	....	5.	.66	11.32	16.42	28.40	5.4	10
*Earliana	Carters	19	5.	8.	13.	8.5	11.	....	17.	3.28	11.00	12.79	27.07	6.7	14
Earliana	Bolgiano	19	1.	1.5	4.	3.	3.5	....	6.	1.00	10.58	13.60	25.18	7.9	22
*Earliana	Burpee	20	7.5	3.	8.5	3.	11.	....	17.	2.50	9.36	12.75	24.61	6.9	25
Earliana	H.E.S. (D)	20	1.5	1.75	7.5	2.	2.	....	9.	1.19	8.80	13.45	23.44	7.7	35
Earliana	Langdon	20	7.	1.5	5.	4.	5.	....	15.	1.87	6.52	10.15	18.54	8.4	62
Earliana	H.E.S. (A)	20	few	2.5	3.	1.5	2.	....	3.	.60	7.82	11.52	19.94	7.3	58
*Earliana	Harris	20	6.	11.5	5.5	7.5	9.	....	10.	2.47	8.28	8.85	19.60	8.7	60
*Earlibell	H.E.S.	19	6.	14.	9.	10.	6.	33.	8.	4.53	9.50	7.36	21.39	9.3	52
*Earliest of All	H.E.S.	20	few	8.5	9.	11.5	6.	27.	8.	3.50	11.50	8.72	23.70	10.7	33

Florida Special	Bolgiano	17	....	....	1.	1.	few	5.	....	.41	12.09	12.94	25.44	9.8	20
Fordhook First	Burpee	20	....	few	few	1.	3.5	5.	....	.47	10.90	12.15	23.52	....	34
Glory	Bolgiano	20	....	1.5	....	few	1.	5.	....	.37	4.25	16.85	21.47	7.9	50
Great B. B.	Bolgiano	20	....	few	few	1.	2.	1.5	....	.22	11.05	19.67	30.94	12.2	5
Greater Baltimore	Bolgiano	18	....	....	....	few	....	....	....	....	7.50	23.34	30.84	9.8	6
Ignotum	H.E.S. (E)	20	....	....	few	....	2.	11.	5.	.90	8.70	11.15	20.75	10.1	53
I X L	Bolgiano	20	few	8.	10.	7.	9.	....	19.	2.65	7.67	8.52	18.84	12.2	61
John Baer	Harris	20	few	few	2.	1.5	5.5	....	6.	.75	12.80	13.05	26 60	9.5	16
John Baer	Gregory	18	....	....	few	1.	1.	....	6.	.44	13.39	12.17	26.00	8.9	18
John Baer	Bolgiano	20	few	1.	....	few	4.5	....	6.	.57	10.95	14.20	25.72	10.7	19
John Baer	Macdonald, A.C.	20	....	few	few	2.	7.5	....	9.5	.95	11.60	9.45	22.00	9.5	44
Livingston's Favorite	H.E.S. (E)	18	few	few	1.	3.	2.	8.	3.	.94	16.05	16.19	33.16	6.3	1
Livingston's Favorite	H.E.S. (E_2)	19	few	few	2.	1.	1.5	5.	5.	.76	15.53	16.16	32.45	8.2	2
Livingston's Globe	Livingston	20	....	....	....	few	few	....	4.	.20	5.07	19.72	24.99	16.0	24
Livingston's Globe	Ferry	19	....	....	....	....	....	....	few	....	5.13	20.11	25.24	17.7	21
Livingston's Manyfold	Livingston	20	few	....	few	1.5	9.	19.	....	1.47	17.45	12.65	31.57	6.6	3
Matchless	Stokes	20	....	....	few	2.	1.5	4.	....	.37	9.70	14.15	24.22	10.5	29
Matchless	Burpee	20	....	....	....	....	....	....	....	....	6.60	16.55	23.15	11.9	36
My Maryland	Bolgiano	20	....	....	few	few	1.	3.5	....	.22	8.40	14.00	22.62	12.1	39
New Early Perfection	Murray	20	....	2.5	3.	3.	3.	5.	....	.82	11.02	11.85	23.79	8.9	31
New Queen	Bolgiano	20	....	....	few	few	2.5	....	3.	.27	11.07	16.60	27.94	9.1	11
New Stone	Bolgiano	20	....	few	3.	1.5	1.5	....	3.5	.47	8.35	13.70	22.52	9.3	40
O.A.C.—C.	O.A.C.	20	....	few	1.5	few	1.5	4.	....	.35	9.22	12.17	21.74	8.7	46
*Prosperity	Bolgiano	21	5.	11.	10.	18.	8.5	30.	8.	4.31	8.66	4.03	17.00	10.6	66
Puritan Hill	Langdon	19	few	3.	few	1.	3.	11.	3.	1.15	15.82	13.76	30.73	7.9	8
Red Head	Macdonald, A.C.	20	few	5.	3.	3.5	2.	....	6.	.97	11.77	12.32	25.06	7.5	23
Red Head	Langdon	20	....	few	1.	1.	2.	....	6.	.50	9.90	11.10	21.50	6.7	49
Rochester	J. H. Rittenhouse	15	3.	few	1.	....	....	2.5	....	.43	9.17	14.16	23.76	5.9	32
Stone	Ferry	20	....	....	....	few	9.	....	1.	.50	7.52	14.82	22.84	10.0	38
Stone	Livingston	20	....	....	....	....	....	....	....	....	5.12	15.42	20.54	9.2	54
Success	H.E.S. (C)	21	....	few	few	3.	4.	10.5	2.5	.95	12.21	8.62	21.88	8.1	45
*Wealthy	Bolgiano	19	11.	10.5	9.	7.	6.5	....	15.	3.15	8.97	7.68	19.80	6.6	59
Whole Salad	Burpee	20	....	few	2.5	1.	2.5	12.	....	.90	11.12	15.37	27.39	8.3	12
Whole Salad	H.E.S.	20	....	few	2.	3.5	1.5	14.	....	1.05	15.75	14.65	31.45	9.3	4

BY-PRODUCTS INVESTIGATIONS

Experimental work on the following projects was carried out during 1919:

1. Variety test of peaches for canning.
2. Sweet Cider bottled.
3. Grape Juice canned.
4. Test of time required in processing canned asparagus.
5. Variety test of peas for canning.
6. Variety test of strawberries for canning.
7. Variety test of strawberries for jam.
8. Variety test of tomatoes for canning.
9. Asparagus soup stock from waste asparagus.

VARIETY TESTS OF PEACHES FOR CANNING.

Twenty-eight yellow flesh varieties (including five Station seedlings) and ten white flesh varieties were canned separately in pint glass jars. The accompanying illustration shows the jar used and the machine for sealing the jar. The use of this sealer and cap enabled the jars to be sealed completely before cooking. Thus it was possible to follow practically the same methods as if canning in tin cans. Canning in glass had the advantage of showing the varieties without breaking the seal.

The following tables give the results of the canning test. In examining these tables the date of canning should be taken into consideration. The season of a peach is extremely important when considering its value as a variety to be used in commercial canning factories. In the Niagara Peninsula peaches are best handled in the factories before the middle of September. Although Lombard plums also ripen late in August or early in September, it is better to combine peach and plum canning than to have peaches extending into the rush of the tomato season. Besides tomatoes in the latter half of September, corn and Bartlett pears must also be canned.

Size of fruit should be medium or large, texture fairly firm to firm, flavor excellent, color orange if possible and syrup clear and colorless.

The varieties, Late Crawford, Reeves Favorite, Early Elberta and Station seedling No. 132444 combined the desirable features to the greatest extent. Early Elberta lacked color more than anything else. But these varieties were the most desirable of those tested and might well be planted for canning factory purposes, providing, of course, that they are desirable in other ways such as hardiness, yield, etc.

None of the white flesh varieties are to be recommended for canning though some of them have the finest flavor. There is a tendency for the syrups to be pink which is undesirable.

TABLE IX.—YELLOW-FLESH PEACHES FOR CANNING DESCRIBED DEC. 5, 1919.

Variety	Date Canned	Size	Diam. Inches	Texture	Flavor	Color	Syrup
1 Banner	September 24	Small	1½—1¾	Soft, edges clean cut	Flat	Deep yellow to orange	Clear, pink.
2 Bernice	" 17	"	1½—1¾	Rather soft "	Edible	Med. yellow	Clear.
3 Bronson	" 17	"	1½—1¾	Fairly firm "	Pleasing	"	"
4 Capt. Ede	" 16	Medium	1¾—2	" "	"	Deep yellow to orange	"
5 Chair's	" 17	Small	1½—1¾	Rather soft "	"	Deep yellow	"
6 Crosby	" 17	"	1¾	Firm "	"	Med. yellow	"
7 Elberta	" 16	Medium	2	Fairly firm "	Excellent	Pale yellow	"
8 Early Elberta	" 10	"	2	" "	"	Slightly more color than 7	"
9 Engle Mammoth	" 9	"	2	Firm "	Flat "cooked"	Deep yellow	"
10 Brigdon	" 2	Large	2 —2¼	Very firm, very clear cut	Agreeable but too mild	Light yellow, pleasing	Very clear.
11 Goring Red	" 11	"	2 —2¼	Firm, clean cut	Flat	Med. yellow	Clear, slightly pink.
12 Late Crawford	" 9	Medium	2	Firm "	Excellent	Deep yellow	Clear.
13 Lee Angle	" 10	Small	1¼—1¾	Fairly firm, clean cut	Excellent	Very fine appearance	Bright golden
14 Lovell	" 20	"	1½	Firm, coarse "	Pleasing	Med. yellow	Clear.
15 Longhurst	" 17	"	1¼—1½	Fairly firm "	Flat	Some pale, Some deep yellow	"
16 New Prolific	" 9	"	1½—1¾	" "	Edible but "cooked"	Med. yellow	"
17 Oceana	" 10	Medium	2	Firm "	Excellent	Deep yellow	"
18 Picquet Late	October 1	"	1¾—2	Fairly firm "	Fermented	Med. yellow	"
19 Pres. Lyon	September 24	Large	2½	Firm "	Flat	Pale yellow	Clear, pink.
20 Reeves Favorite	" 9	Medium	1¾—2	Firm, clean cut edges	Excellent	Deep yellow	Clear.
21 Snow's Orange	" 9	Small	1½—1¾	Fairly firm, clean cut	Pleasing	Orange	"
22 Stearns	" 24	Medium	1¾—2	Firm "	Flat, little sour	Med. yellow	Clear, pink.
23 Wellington	" 17	Small	1¼	Firm "	Pleasing	Pale yellow	Clear.
24 Seedling No. 11043	" 10	Large	2¼	Very firm, very "	Excellent, not as delicious as 132444	Little darker yellow than 132444	"
25 Seedling No. 11045	" 10	Medium	2	Firm, clean cut	Pleasing	Med. Yellow	Clear, pink.
26 Seedling No. 11046	" 10	"	2	" "	"	"	Clear.
27 Seedling No. 132437	" 9	Small	1¼—1½	Soft, ragged	Very flat	Pale yellow	Much sediment.
28 Seedling No. 132444	" 9	Large	2 —2½	Firm, very clean cut	Excellent, delicious	Med. yellow, very bright	Clear.

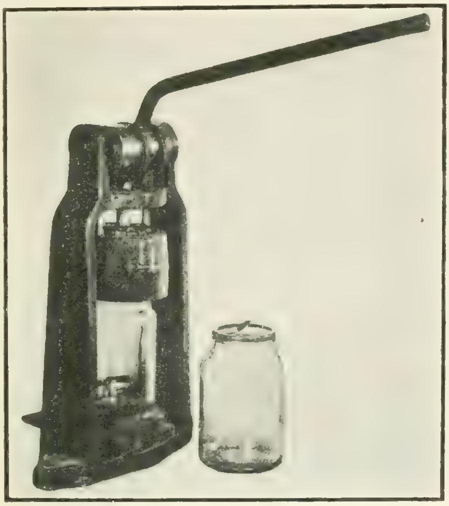
TABLE X.—WHITE FLESH PEACHES FOR CANNING, DECEMBER 5, 1919.

Variety	Date Canned		Size	Diam. Inches	Texture	Flavor	Color	Syrup
1 Alton	September	8	Medium	2	Fairly firm, clean cut	Flat	Almost white	Clear.
2 Biquette Free	"	11	"	2	Rather soft, "	Pleasing	" "	"
3 Cumberland	August	23	Small	1½	Firm, "	Flat (poor)	Light green	"
4 Crothers	September	17	Medium	2 —2¼	" "	Pleasing, slightly "cooked"	Creamy yellow	Clear, pink.
5 Old Mixon Free	"	16	"	1¾—2	Rather soft, "	Pleasing	" "	" "
6 Hative Paullard	August	23	Small	1½—1¾	Soft, frayed	Flat, "cooked"	" "	Clear.
7 Prof. Vilaire	"	23	Medium	2 —2¼	Firm, "	Flat (poor)	Light green	"
8 Strawberry	September	11	Small	1¼—1¾	Rather soft, "	Excellent	Creamy yellow	Clear, slight pink.
9 Stevens	October	1	"	1¼—1¾	Firm, "	Flat	Almost white	Clear.
10 Walker's	"	1	Medium	2 —2¼	" "	"	" "	"

SWEET CIDER BOTTLED.

With large quantities of low priced apples available a simple method of preserving apple juice with standard equipment and with a resultant pleasing beverage has long been sought. The daily pressing of apples and immediate selling of the juice has been practised by many stores making a business of selling soft drinks. That is an excellent method, insuring a fresh drink of perfectly natural flavor. This practice, however, becomes more and more difficult as spring and warm weather approach. Only high grade apples, perfectly stored, are of service as winter draws to a close.

Likewise, apple juice made from the cheaper apples in the fall, and stored in barrels lacks stability and is very apt to become so alcoholic as to make the vendor liable to prosecution under the Ontario Temperance Act.



Thrift sealer and jar.

Cider bottles, pint and gallon.

Preservatives such as salicylic acid and benzoate of soda have been used fairly successfully in preventing fermentation of apple juice. But the use of such chemicals has been discouraged by officials administering the food laws because it has not been decided whether there is a reasonable margin of safety to public health in using such chemicals. Then, again, moderate quantities of preservatives seem to have only a temporary effect. Manufacturers using one-tenth of one per cent. of benzoate of soda only guarantees for thirty days.

On Oct. 2, 1919, several bushels of cull apples were available from the Station orchards. These apples were of different varieties, ranging in quality from Pewaukee to Greening.

The apples were ground and cold pressed in an hydraulic press, having a hand pump. The thirty gallons of juice obtained tested 16.5 degrees Balling (corrected to a temperature of 60 degrees Fahrenheit). Since a degree Balling represents approximately one per cent. sugar in clear apple juice, it will be seen that the juice was rich in sugar. Concord and Niagara grapes two weeks previously, tested only 12.3 degrees Balling and 12.7 degrees Balling respectively.

The juice was then placed in a copper jacketed kettle of the draw-off type. Steam was turned on and the temperature was watched carefully until it reached 180 degrees F. The purpose of this was to coagulate the proteid substances. A thick brown film formed and was removed by straining the juice through cheesecloth. In this connection it is recommended that a series of tests be performed to determine the optimum temperature for heating the juice to clarify it.

The warm juice was filled partly into small beer bottles and gallon bottles. The small bottles were sealed with Crown stoppers, the gallon bottles with a special top made tight by turning a clip down. (See accompanying illustration.)

The sealed bottles were then placed in a warm water bath and held at 175 degrees F. for thirty-five minutes. Here again a time and temperature test should be carefully made with respect to keeping qualities and resulting flavor.

The juice has been stored in a room ranging in temperature from 45 degrees F. to 70 degrees F. No fermentation has taken place. The flavor is very pleasing though, of course, not quite like fresh apple juice. There is a slight amount of sediment.

The results obtained have pointed the way for further work. The product gives promise because it uses a low grade apple and simple equipment found in almost any canning factory.

GRAPE JUICE CANNED.

The Canner, Chicago, Aug. 23, 1919, published an article, "Canning Grape Juice," by W. V. Cruess, University of California.

It is pointed out that bottled grape juice as found on the market is too expensive for heavy consumption of the beverage. Canning is to reduce the cost. This reduction of cost in canning comes not only from the use of the cheap tin container, with its attending advantages of ease in handling, in the factory and out of it, but also from a simplified method of treating the juice.

Before proceeding it might be well to remark that the can undoubtedly offers economy for the householder. The householder must buy a pint or quart container as grape juice ferments when the seal is broken. But a seller of glasses of beverages, in a store, can readily use larger containers. Hence, we suggest that the gallon bottle might be used economically for this class of trade. This bottle has been referred to in detail under the heading "Sweet Cider Bottled."

Six varieties, Campbell, Concord, Delaware, Lindley, Niagara and Worden were canned in number two sanitary tins (imperial pint) and in gallon bottles, following the California method.

The grapes were first crushed and pressed. In canning it is important that no preliminary heating of grapes be done. Heating brings out the color in the skins and makes the juice more or less highly colored. The salts of tin produced by the action of the acid on the can alter the color of the grape juice, making it unattractive. Tests by Cruess show that it is best to start with a pale colored juice.

The pressed juices were placed in a copper jacketed kettle and heated to 165 degrees F. for the purpose of clarifying. Before straining the juices off of this kettle a small amount of cane sugar was added. As shown in the accompanying table, the juices from the press tested only 12.3 to 19.7 degrees Balling. Since Californian grapes test well over 20 degrees Balling and since it is customary in Ontario to add sugar in making grape juice enough sugar was added to bring the test up to about 25 degrees Balling. In the case of the variety Niagara, too much was added, the final test being 30.3.

The hot, strained, sweetened juice was filled into the No. 2 cans and gallon bottles, sealed and held in a water bath for thirty-five minutes.

After holding in storage from Sept. 18th to Dec. 24th, there was no indication of spoilage in either cans or bottles.

Careful examinations of the canned juices were made, several persons passing opinions on them. Brief notes have been made in the accompanying table.

All of the juices except Delaware were considered a delicious beverage just as they came from the can, without dilution or addition of any kind. Campbell, Lindley and Concord were particularly pleasing in flavor, whereas Niagara was too sweet (although this is undoubtedly not the fault of the variety but of an excess of added cane sugar). In color Lindley was most attractive, being a light, clear amber. Niagara and Campbell were too pale in color. Concord was about as attractive in color as Lindley but not as clear. Worden and Delaware were too dark.

TABLE XI.—NOTES ON CANNED GRAPE JUICE.

Variety	Degrees Balling Fresh Juice at 60°F.	Degrees Balling Canned Juice at 60°F	Examination Canned Juice on December 12, 1919		
			Aroma	Color	Flavor
Campbell ..	12.3	24.0	Strong, Similar to Fresh Grape	Light Straw ..	Quite Acid
Concord ...	12.3	27.0	Strong, Similar to Fresh Grape	Light Amber..	Delicious, Tart
Delaware ..	19.7	25.5	Lacks Aroma..........	Dark Amber..	"Off," peculiar
Lindley....	15.0	26.0	Strong, Pungent, Grapy	Light Amber, Clear Attractive	Delicious, Sweet
Niagara ...	12.7	30.3	Strong, Pungent, Grapy	Light Straw ..	Too Sweet
Worden....	12.9	25.0	Strong, Grapy.........	Dark Amber ..	Delicious, Tart

It should be added that each variety yielded about 50% of its weight in juice. A "degree Balling" represents approximately 1% sugar. All varieties were canned on September 16, 1919.

VARIETY TEST OF STRAWBERRIES FOR CANNING.

Thirty-one varieties of strawberries were canned separately in pint glass jars. After hulling, the berries were placed in the jars, covered with a hot sugar syrup testing 55 degrees Balling, sealed and processed in boiling water for eighteen minutes.

In the accompanying table are given the varieties, notes on color and flavor and general remarks.

The variety Portia was outstanding. The fine dark red color and full natural strawberry flavor was unsurpassed. Other tests of strawberries have demonstrated that Portia is a vigorous growing variety, hardy, less subject to mildew than most others and moderately heavy yielding.

Desdemona was almost as good as Portia.

Admiral was a variety of promise in the fresh condition, *very* sweet and bright red. Like many others the heat of canning destroyed color. Though sweet when canned its appearance was poor.

Joe. Kellogg's Premier and Pocomoke were also pleasing in flavor.

TABLE XII.—VARIETY TEST OF STRAWBERRIES FOR CANNING.

Variety.	Color Fruit.	Flavor.	Syrup.	Remarks.
1. Admiral	light red	very sweet	light red	liked by many
2. Bederwood	almost white	flat	light red	useless
3. Cassandra	medium red	pleasing	medium red	good
4. Cordelia	light red	sour	medium red	poor
5. Crescent	light red	sour	light red	poor
6. Desdemona	deep red	excellent (natural)	deep red	fine article in every respect
7. Dr. Burrill	medium red	peculiar	medium red	only fair
8. Early Ozark	medium red	pleasing	medium red	good
9. Enhance	medium red	edible	medium red	fair
10. Exchange	medium red	excellent (sweet)	medium red	little soft, very good
11. Wm. Belt	almost white	edible	light red	fair
12. Glen Mary	medium red	peculiar; many may like it	medium red	not generally popular
13. Island King	medium red	peculiar	medium red	poor
14. Joe	light to medium red	excellent	light to med. red	fresh, delicious flavor
15. Julia	light red	sour	light red	soft, small, poor berry
16. Kellogg's Premier	dark red	excellent	dark red	little lighter than Portia
17. Kellogg's Prize	light red	excellent	light red	very firm, meaty
18. Mariana	medium red	very good	medium red	soft
19. Marshall	dark red	poor	dark red	same color as 16
20. Magic Gem	light red	poor	light red	large, firm berry
21. Ophelia	light red	sour	light red	large, soft berry
22. Ohio Boy	medium red	fair	medium red	small berry
23. Peerless	dark red	fair	dark red	same color as 16
24. Pocomoke	medium red	fair (sweet)	medium red	slight peculiarity flavor good
25. Portia	dark red	excellent	dark red	fine, beautiful
26. Sample	medium red	fair	medium red	"cooked" flavor
27. Senator Dunlap	dark red	sharp, natural	dark red	soft berry, very good
28. Superb	medium red	fair	medium red	slight peculiarity in flavor
29. Three W's	medium red	fine, natural	medium red	large, soft berry
30. Valeria	light red	good (sweet)	light red	small
31. Vergilia	light red	sour	light red	large, soft berry

VARIETY TEST OF STRAWBERRIES FOR JAM.

In making the twenty-six separate lots of strawberry jam it was found difficult to give uniform treatment to each because some samples were so small that they were hard to handle in the fairly large kettles which were used.

As far as possible the following proportions were used in making the jams:

Berries	7 lbs.
Pectin	1 "
Sugar	11 "

Here again Portia and Desdemona were outstanding. They retained the form of the berry, had a dark red color and a pleasing "wild" flavor.

Enhance, Glen Mary and Ohio Boy were other varieties which combined the best characteristics.

The following table gives notes on appearance, color, flavor and wholeness of the different varieties tested.

TABLE XIII.—NOTES ON STRAWBERRY JAM IN 1919.

Variety.	General Appearance, Color, Flavor, Wholeness of Berry.
1. Bederwood	Much too pale to be used.
2. Cassandra	Much too pale to be used, fermenting.
3. Cordelia	Good jam, bright medium red, berries broken down.
4. Crescent	Berries dull in color, though whole.
5. Desdemona	Attractive, whole berries, dark in color like Portia, delicious flavor.
6. Dr. Burrill	Excellent color, but jelly not clear and berries broken; flavor good.
7. Early Ozark	Much too light in color to be used.
8. Enhance	Attractive, very pleasing, whole berries, flavor better than Pocomoke.
9. Glen Mary	Dark jam, good, whole berries.
10. Joe	Too light in color.
11. Julia	Fair jam, very seedy, fruit broken, delicious wild flavor.
12. Kellogg's Premier	Attractive, very pleasing, whole berries, flavor only fair.
13. Magic Gem	Attractive, whole berries, berries rather dull in color, good flavor.
14. Mariana	Much too pale to be used, fermenting.
15. Marshall	Attractive, whole berries, flat.
16. Ohio Boy	Attractive, pleasing, whole berries, excellent flavor.
17. Ophelia	Berries badly broken down.
18. Peerless	Much too pale to be used, fermenting.
19. Pocomoke	Attractive whole berries, very bright, jelly clear.
20. Portia	Attractive whole berries, very deep red, clear, delicious wild flavor.
21. Sample	Very dark, flat flavor, fermenting.
22. Senator Dunlap	Fair. berries broken down and dull in color.
23. Superb	Too dark, berries whole.
24. Three W's	Much too pale to be used.
25. Valeria	Fermenting, much too pale.
26. Vergilia	Dull, fermenting.

ASPARAGUS SOUP STOCK FROM WASTE ASPARAGUS.

Considerable work was done in developing a method for manufacturing asparagus soup stock from asparagus butts, trimmings, spindly stocks, twisted stocks and open headed stocks, all of which are ordinarily unmarketable. It may be noted that this waste when separated carefully from the saleable stock amounted to 55 *per cent. of the total weight of asparagus* brought in for packing.

The plan first adopted for handling the soup stock was to wash the stock thoroughly, break it into two inch lengths, blanch it in boiling water for twenty minutes, pack it in No. 2 sanitary tins, cover it with hot water, seal and process for seventy minutes at 240 degrees F. The result was not satisfactory. The tough fibres were still tough and the flavor was gone. Evidently it was impossible to soften the tough fibres without destroying the flavor.

The second method was much more successful. After washing the asparagus it was boiled in a steam jacketed copper kettle for twenty minutes, merely covering the asparagus with water. From the kettle the asparagus went through the Brierley pulping machine. This machine beat the tender portions through a sieve, producing a smooth, creamy pulp, bright green in color and of full asparagus flavor. The tough portions were collected separately and were discarded. The pulp was placed in another kettle, salt added, reheated, filled into No. 2 sanitary tins, sealed and processed twenty minutes at 240 degrees F. This time should be increased to thirty minutes at least as there was considerable spoilage.

The following figures give an idea of the proportions of raw material, soup stock and salt:

Asparagus waste	330 lbs.
Heated pulp ready to pour into tins	145 lbs.
Salt added to pulp	20 oz. (4/5%)
No. 2 tins (imperial pint) produced	126 (18½ oz. net)

A can of soup stock allowed to stand in a glass tube showed eight inches of thick asparagus with one-half inch of clear liquid above.

The question of standardizing the consistency of the stock is one to be determined. A few hydrometer tests should reduce this to a science. Although it is possible for the worker to judge the proper consistency quite closely, it would hardly be safe for a factory head to allow that method.

The following recipe for making asparagus soup from the soup stock was found to produce a fine, appetizing food:

Heat one cup milk and thicken it with ½ teaspoon of butter rubbed to a cream with ½ tablespoon of flour. Season with salt and pepper and pour in two cups (one No. 2 tin) of soup stock. When boiling hot, serve with or without toasted bread sticks, crackers, etc.

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